OCTOBER '56

MODERN TEXTILES MAGAZINE

Specializing in Rayon and Synthetic Fibers since 1925

FIBERS

FABRICS

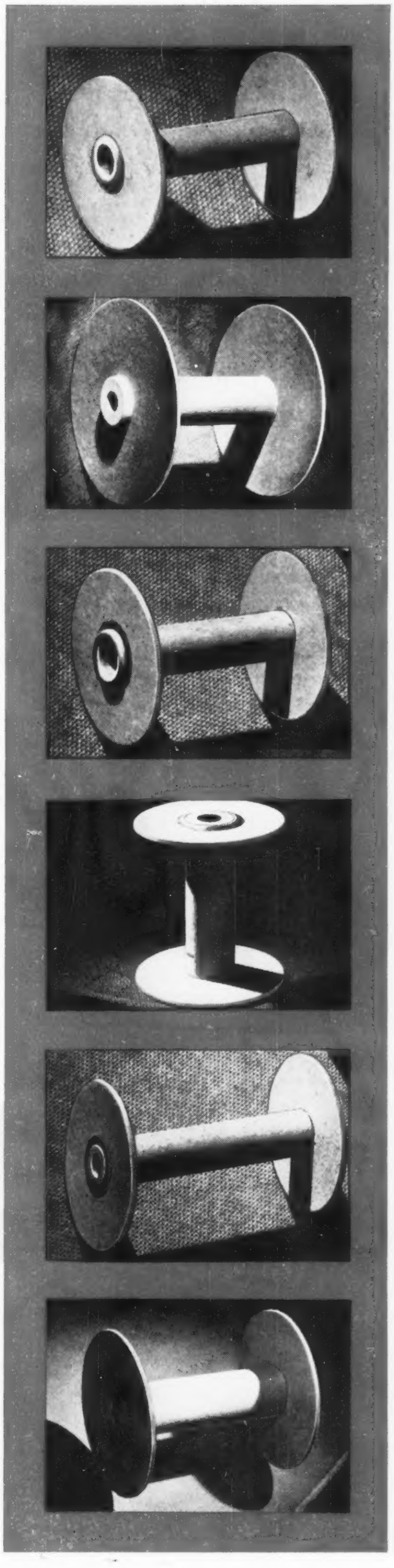
FINISHES

How LEON LOWENSTEIN guides the rise of the house of Lowenstein--
story on page 31

THIS MONTH'S SPECIAL FEATURES

Non-wovens today & tomorrow
How nylon behaves in carpets
What anti-static agents can do
How to handle spot weaves

AND 12 MORE INTERESTING FEATURES AND HELPFUL REPORTS



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The Tennessee Corporation, miners of Sulfur Bearing Ores, announces another Basic Sulfur Textile Chemical, **T C HYDRO** for the Southern textile industry.

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TENNESSEE CORPORATION

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MODERN TEXTILES MAGAZINE*

October, 1956 Vol. 37, No. 10

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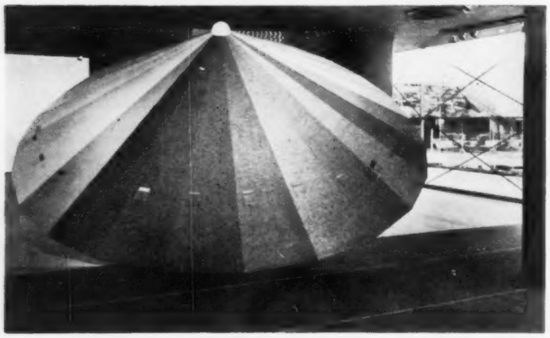
The Principal Trade Groups

Rayon and Acetate Fibers Producers Group — Empire State Bldg., New York
National Federation of Textiles, Inc. — 389 Fifth Ave., New York
American Association of Textile Chemists and Colorists — Lowell Techn. Inst., Lowell, Mass.
American Association for Textile Technology, Inc. — 100 W. 55th St., New York
Silk and Rayon Printers and Dyers Ass'n of America, Inc. — 1450 Broadway, New York
Synthetic Organic Chemical Manufacturers Association — 41 E. 42nd St., New York
Textile Distributors Institute, Inc. — 469 Seventh Ave., New York
American Rayon Institute — 350 Fifth Avenue, New York

Fabric Exhibit in Museum



This huge umbrella with 24 panels made up of different fabrics both inside and out is one of the ingenious devices used to display fabrics at the "Textiles U.S.A." exhibit currently on view at New York's Museum of Modern Art. The exhibit will continue to November 4. Included in the show are 185 samples of industrial, apparel and home furnishing cloths chosen for their outstanding qualities.

Leicester Knitting Show This Month

Many American machinery manufacturers will exhibit at the International Knitting Machinery Exhibition which opens in Leicester, England, on October 17 and continues until the 27th. The exhibition this year will have more exhibitors showing a broader range of products than ever before.

Every type of knitting and yarn preparation machinery will be on view along with dyeing and finishing equipment for knitwear. It is expected that the emphasis will be on automatic machinery and labor-saving devices. Among the companies from the United States which will have exhibits are: Carolina Knitting Machine Corp.; Chandler Machine Corp.; Fidelity Machine Company, Inc.; Galkin Machine Corp.; The Hemphill Co.; Jacquard Knitting Machine Co., Inc.; Kidde Mfg. Co., Inc.; Karl Lieberknecht Inc.; Man-Sew Corp.; Markem Machine Agency Inc.; Marvel Specialty Co., Inc.; Prazak Machine Co.; Scott & Williams Inc.; Soabar Corp.; Specialty Mfrs. & Sales Co.; Supreme Knitting Machine Co., Inc.; Textile Machine Works Inc.; U. S. Blind Stitch Machine Corp.; U. S. Cloth Cutting Machine Corp.

New Solution-Dyed Carpet Rayon

A new solution-dyed carpet rayon with improved harshness and crimp has been introduced by Hartford Rayon Co., a division of Bigelow-Sanford Carpet Co. Tradenamed "Kolorbon", the new carpet rayon is available in eight and 15 denier staple. Its predecessor, Kolorlok, had been available in only 15 denier. Hartford has discontinued production of Kolorlok.

According to George R. McGrath, sales manager, the improved characteristics of the new fiber give carpets a greater resilience, increased resistance to matting, a full hand and other advantages.

Narrow Fabrics Institute

Leading manufacturers completed formation of an industry organization, Narrow Fabrics Institute, Inc., at a recent three-day meeting at the Drake Hotel, Chicago.

John Peffer, assistant general manager, Buffalo Weaving and Belting, was elected chairman of the board; Russell J. Neff, assistant to the president, Phoenix Trimming Co., was elected president. Headquarters have been established at 11 W. 42nd St., New York City. The Institute will be managed by the firm of Penn Affiliates.

Celanese to Expand in Chemicals, Plastics

Future expansion of Celanese Corp. of America will be largely for chemical and plastics capacity, president Harold Blancke told an audience of security analysts last month. With regard to Celanese's textile division, efforts will be principally directed toward stimulation of sales to bring existing facilities up to 100% operation, he declared.

Mr. Blancke said that Celanese has expansion plans calling for expenditures of $100 million during the next five years. He estimated that this new investment would increase annual sales by $125 million by 1960 bringing the company's sales level in that year well in excess of $300 million.

Week-Long Mill Shutdown

Three large weavers closed their mills producing filament and spun synthetic fabrics during the first week of September. They were Burlington Industries, Amerotron Corp., and J. P. Stevens & Co.

In explaining Amerotron's decision to shut down, Robert L. Huffines, Jr., president, said that his company's man-made fiber fabric business is not returning to stockholders earnings to compensate them for their investment. He attributed poor sales of these fabrics to increased imports and too great a rate of production. He stated that Amerotron would not operate any of its mills producing synthetics in excess of five days a week for the rest of 1956.

Amerotron closed down its mills producing synthetics over the week of the Fourth of July. Burlington Industries announced in August that it had reduced production of synthetics to a four-day week basis.

Wool Cloth Duty Rise Asked

Citing rapidly increasing imports this year, the National Association of Wool Manufacturers again is urging the Government to increase the import duty on woven wool fabrics. Edwin Wilkinson, NAWM executive vice president, in a letter to the U.S. Committee for Reciprocity Information, noted the domestic woolen and worsted industry has contracted about 50% since World War II, and that imports of wool fabrics would exceed the 5 per cent trigger point in a few weeks.

Under the Geneva Reservation of the General Agreement on Tariffs and Trade, the U. S. may increase the ad valorem duty on woven wool fabrics from 25 to 45 per cent when imports in any calendar year exceed 5 per cent by weight the average annual production of similar fabrics in the U. S. in the three preceding years.

U.K. Admiralty Approves Nylon Ropes

Use of nylon ropes for towing and mooring purposes was approved recently by the British Admiralty, which issued a detailed specification setting out requirements for ordinary Grade I three-strand manila ropes, nylon ropes and Terylene ropes.

The Royal Navy has been using nylon for some time past for certain special purposes such as air-target tow-ropes and climbing ropes. More recently extensive trials have been carried out with heavy-duty nylon marine ropes. The new specification brings the Navy into line with leading shipping organizations many of which now use nylon ropes extensively for their safety, reliability, ease of handling and long-term economy.

Chrysler uses I·R·C's New Nylon

to make floor coverings and upholstery

WHY DOES CHRYSLER USE THE NEW NYLON IN THEIR IMPERIAL, CHRYSLER, DODGE AND PLYMOUTH CARS?

Because even a *small* percentage of The New Nylon, in automotive fabrics, gives wear advantages out of all proportion to the amount used. It means longer wear...it means greater crush resistance...it means less matting... it means higher abrasion resistance...based on comprehensive laboratory and practical test methods applicable to the automotive industry.

If you're making blends, or 100% nylon fabrics, look into the big advantages offered by The New Nylon Staple!

More Resiliency with less Crushability • Greater Strength
Better Luster • Better Crimp • Lower Dye Costs
Greater Resistance to Abrasion • New Economy

THE NEW Nylon Staple I·R·C

INDUSTRIAL RAYON CORPORATION

Sales Offices: 500 Fifth Avenue, New York 36, N. Y. • 627 Guilford Bldg., Greensboro, N. C.

The fibers created to fit today's living . . . have helped change the picture of modern merchandising.

They have set new standards for home furnishings, industrial and apparel fabrics: fashion rightness . . . light weight . . . long wear . . . easy care.

And by making possible fabrics with these practical plusses, they have opened wide the door for new selling opportunities . . . like the market for summer-weight wash and wear men's clothing . . . the market for easy-care sportswear for the whole family . . . nylon sheets that wear longer, store compactly . . . "stretch" hose and apparel.

And so much more is ahead. Du Pont fiber and textile research and Du Pont marketing services will continue to work toward better living for American customers . . . and better ways to bring it to them. If Du Pont's modern-living fibers aren't a big part of your picture . . . maybe you're missing an opportunity.

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

DACRON** RAYON ACETATE

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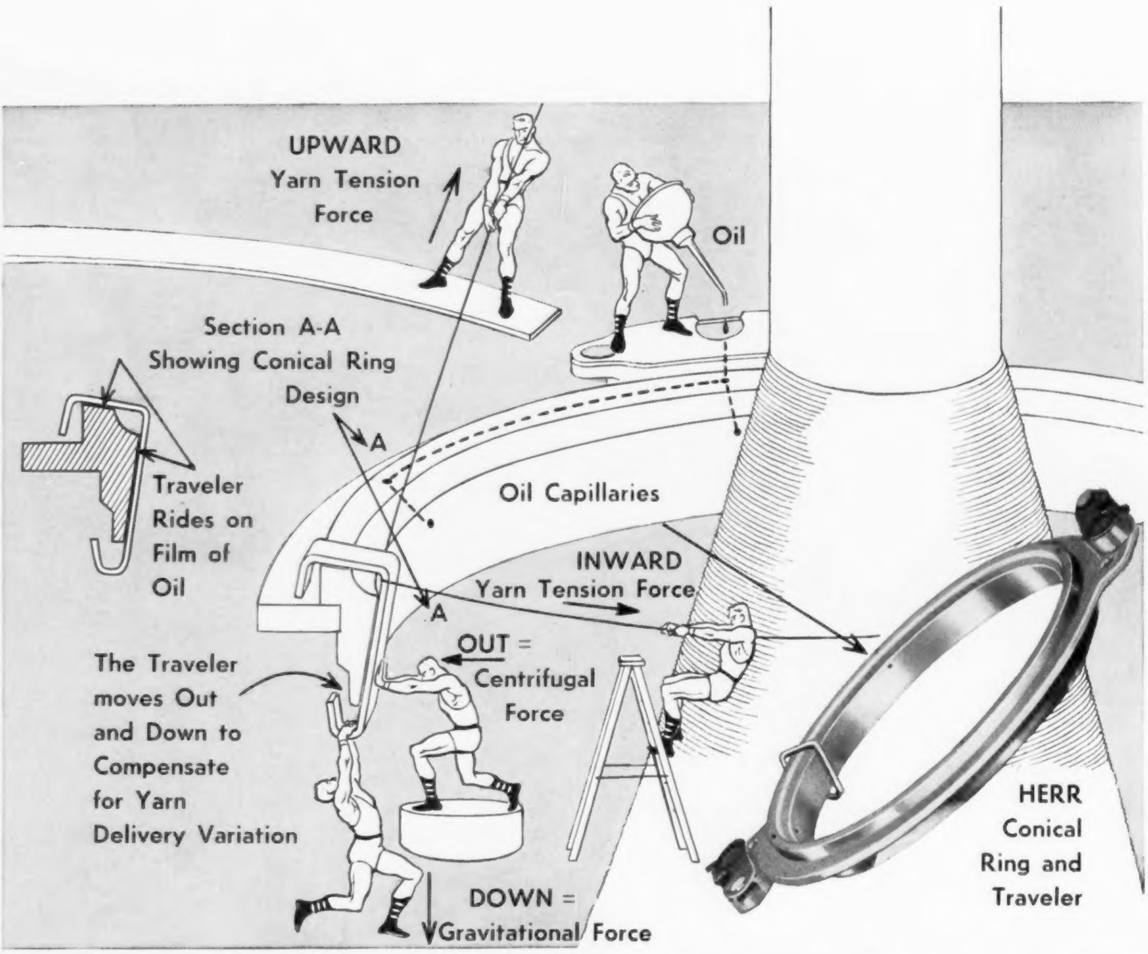
*"Orlon" is Du Pont's registered trademark for its acrylic fiber. **"Dacron" is Du Pont's registered trademark for its polyester fiber.



HERR Conical Ring Design forces the traveler out and down, equalizing the yarn tension!

RESULTS

- **Yarn breakage is prevented**
- **Yarn is smoother**
- **Heavier More Uniform Doffs**
- **Minimizes Wear on Ring and Traveler**

Ask for help on your problem.

The Herr Conical Ring Design equalizes the yarn tension forces (upward and inward) and the Traveler centrifugal and gravitational forces (outward and downward). These opposing forces are balanced and the traveler rides on the ring with minimum frictional contact.

Reservoirs feed oil to the capillary openings. The Traveler distributes this oil to form a microscopic film on which it rides permitting maximum spindle speed with minimum Ring and Traveler wear.

If you spin or twist confer with Herr.

Please send technical literature on
Conical Rings ☐ *Herr Flyers* ☐

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COMPANY ....
ADDRESS ....
CITY .... STATE ....

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MANUFACTURING CO., INC.

308 FRANKLIN STREET, BUFFALO 2, NEW YORK

Dial the Right Number...

AND YOUR PRIZE MAY TOP THE TV GIVEAWAYS!

It's as simple as that! The phone number: LExington 2-3520.

Dial that number and you will find yourself in a new world of fabric potentiality. You will be introduced to the amazing line-up of Bemberg rayon yarns.

Cupioni® rayon you know, of course. It is now smashing sales records clear across the country . . . setting new profit highs for mills, converters, cutters, and retailers.

But there are many other exclusive Bemberg rayon yarn developments. Flaikona† (America's only continuous filament plied flake); Strata†; Dream Slub; Cupracolor†; Nub-lite†; Glitter, and many, many others.

Here in our varied array of yarns you may find that single seed . . . that germ of an idea . . . that will give you the fabric that will take its place beside the sensational Cupioni blends.

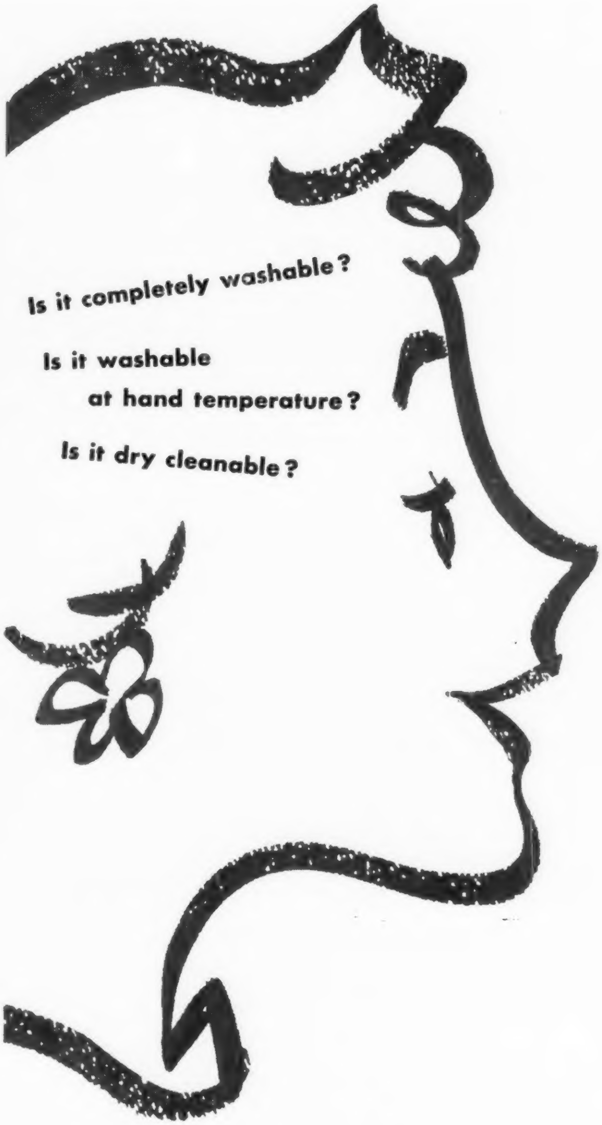
Pick up that phone right now . . . and dial LExington 2-3520!

†Reg. app. for

Bemberg®

ARISTOCRAT® OF RAYON YARN

The above rayon yarns are products of: AMERICAN BEMBERG • Main Office: 261 Fifth Avenue, New York 16, N. Y. • Plant: Elizabethton, Tennessee.



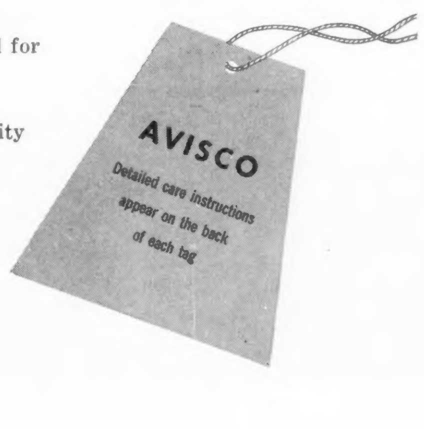
AVISCO® Integrity Tags give the answers

In the minds of apparel shoppers throughout America the Avisco Integrity Tag is fast becoming THE symbol for rayon and acetate fabrics they can depend on.

It gives instructions for washing and dry-cleaning. It builds confidence. It demonstrates that the high quality of the garment goes all the way back to the basic fiber.

Important licensees are joining the Avisco program. National advertising for products containing Avisco fibers appears week after week in magazines and on TV. Retailers are promoting and benefiting from the protection of the program.

For information call American Viscose Corp., 350 Fifth Ave., New York 1, N. Y. LA 4-7200.



FEATURES OF THE NEW "DW" WARPER

CAPACITY. The "DW" Super-Speed Warper will wind beams up to 40" head diameter. All types of beams up to this size can be accommodated.

LET-OFF MECHANISM. In order to insure uniform pressure on the driving drum as the beam builds up, a new let-off mechanism has been developed. This permits extremely accurate automatic gaging and maintenance of pressure, and consequent uniformity of the beam.

DOFFING. A power-operated built-in doffing mechanism helps to reduce down time to a minimum and saves effort substantially. Sturdy arms, which support the beam, pivot outward to set the beam on floor or truck as desired.

PUT A NEW "DW" WARPER
IN FRONT OF YOUR PRESENT
"VC" CREEL

It is perfectly possible to do this, and the added advantages of lower cost and greater productivity can make the investment a profitable one. Gains come in several ways — larger beams can be wound, the beams are of greater uniformity throughout, and doffing is much easier. The new "DW" Super-Speed Warper is a little deeper from front to back, since the driving drum, clutch, brake, and motor are now arranged back of, rather than underneath, the beam. With this re-arrangement, valuable improvements have been made in many important elements of the drive and controls. We suggest you discuss the possibilities for *your* mill with your Barber-Colman representative at the next opportunity.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

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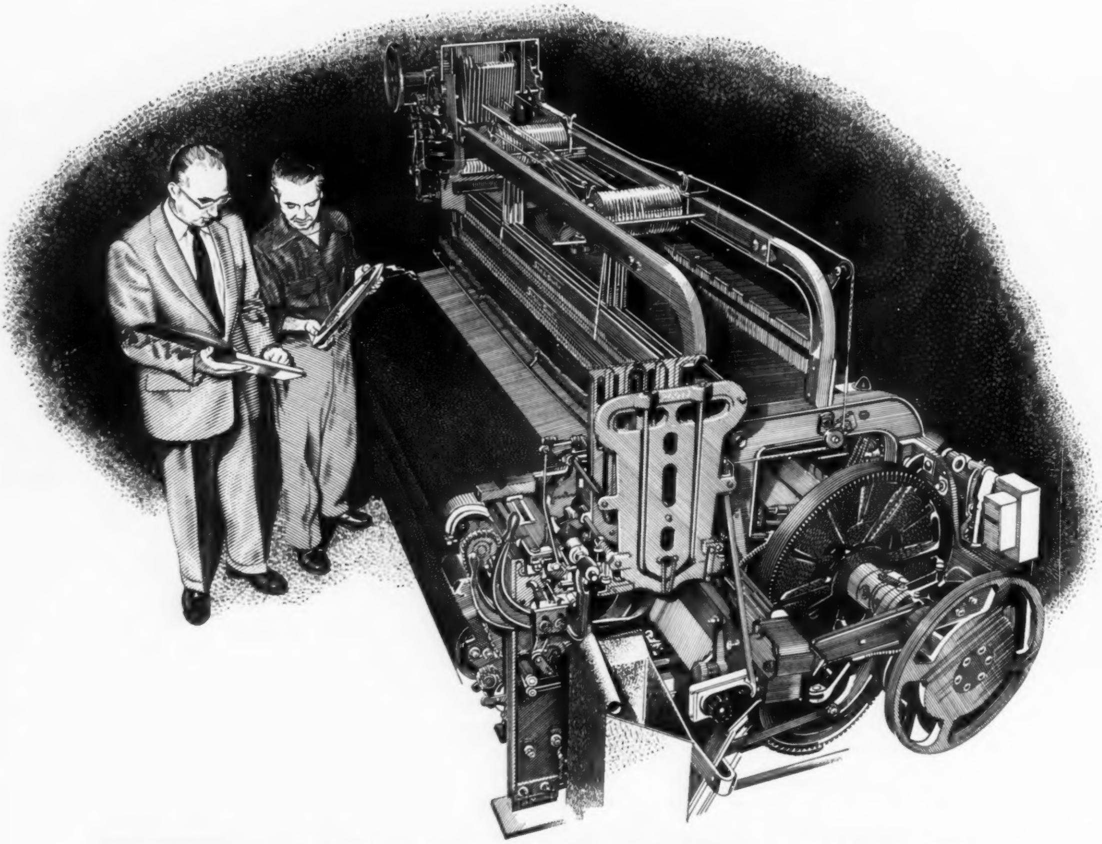


Throwsters Follow New Trends with Stantex

by J. H. Callicott, *Sales*, Greensboro, N. C.

Throwsters today are adopting new methods or have under test procedures applicable to all types of synthetic yarns to provide knitters with improved yarns, especially for the full fashioned hosiery, seamless hosiery, and half-hose industry with special reference to the newer type bulk yarns. All these yarns have a definite place in the knitting field. Much interest, too, is being shown in combinations of these yarns with cotton and this should be of interest to knitters, as the use of multicombination yarns enhance the effect of different patterns which is of so much importance in the half-hose and anklet field.

With machinery manufacturers supplying more modern and better equipment and along with the latest developments in STANTEX® processing oils and their more efficient application, we believe that knitters will be looking for better knitting yarns.

The characteristics of STANTEX processing oils for synthetics are being improved, particularly with reference to frictional properties and yarn relaxation. This results in less tension and better cone build-up, with proper density for good knitting. STANTEX coning and processing oils resist oxidation, do not discolor and are easily removed in normal wet processing.

Standardgrams

Stantex Processing Oils Provide High Lubricity and Static Control

In sizing multifilament nylon hosiery yarns, the correct procedure after twisting and setting is to take the yarn to the sizing area for application of size. Then later at coning the sized yarn is oiled with coning oil to provide lubricity, anti-static control and good cone formation for quality knitting performance. Much work is now in progress, with very favorable results, in the application of a combination of size and oil in one operation at the coning machine. This is accomplished by mixing special STANTEX oils with size and enough water for proper viscosity control and applying at the coning operation.

It is necessary to use a circulating system on the coning machine which should also be equipped with a viscosimeter to control properly the viscosity. The percentage applied varies according to requirements, but the range of application is usually 2% to 4%. The oil-size mixture makes an excellent film and knitting results have, in general, been most favorable. The STANTEX oils used in this process are especially made for size stabilization. After applying the oil and size by this method, the yarn can be either air dryed or force dryed prior to knitting. By eliminating the sizing operation, a reduction in cost is obtained while still maintaining good knitting performance.

Our staff offers technical assistance and information on STANTEX oils for throwsters, weavers and knitters. Let us discuss your problem at your convenience.

New Applications for Mill-Proved Oil

Mr. Mill Superintendent, STANTEX 1032 is an oil for which you will have many uses in your various applications. It has been mill-proved over many months for the following oiling and finishing purposes:

1. Coning dyed filament nylon yarn.
2. Finishing off muff-dyed nylon.
3. Fifteen denier nylon stretch yarn.
4. Coning dyed acetate and viscose yarns.
5. Finishing skeins or packages of dyed acetate and viscose yarns.
6. Coning dyed spun acetate yarns.
7. Coning preshrunk seamless welt nylon yarns.
8. Nylon-cotton combination yarns.
9. Cop yarns.
10. Sized multifilament nylon yarns for knitting.

Let us send you a sample of STANTEX 1032 along with processing information for your particular problem. Its low cost and high efficiency will afford excellent processing.

STANDARD CHEMICAL PRODUCTS, Inc.
HOBOKEN, NEW JERSEY · CHARLOTTE, NORTH CAROLINA
CHATTANOOGA, TENN. · PATERSON, N. J. · SWANSEA, MASS. · SALISBURY, N. C.
SUNBURY, PA. · SACRAMENTO, CALIF. · GREENSBORO, N. C. · GREENVILLE, S. C.

MODERN
TEXTILES MAGAZINE

October, 1956
Volume 37 Number 10

Publisher's Viewpoint

Fiber Producers' Advertising — How Effective Is It?

After a few years of quiet on the new fiber scene, there has appeared recently a fresh group of brand-new fibers. During the past twelve months we have been told about Darlan, a new fiber developed by B. F. Goodrich Chemical Co. We have been introduced to Verel, a new fiber of Eastman Chemical Products, Inc. And only a few months ago we received formal announcement of the birth of Zefran, fathered by Dow Chemical Co. About the same time we learned that Creslan, long kept waiting in the background by American Cyanamid Company, was at last going to be available on a commercial basis.

Thus to their already long lexicon of man-made fibers, millmen must add four new names. How to keep up with the man-made fibers, new and old; how to make use of their varying properties, and how to evaluate claims made for them, is, indeed, becoming more and more difficult for millmen, converters, dyers and finishers, and garment manufacturers.

What is even more important, the textile processor, the man who manufactures fabrics from these fibers and yarns, needs to know how to do so in a way consistent with profitable operation of his mill. The converter, as well as the dyer and finisher, needs to know how to have these fabrics dyed and finished in a way consistent with the requirements of competitive pricing. Unless the millman, converter, dyer and finisher know these things, the most wonderful fibers in the world will not reach consumers in sufficient volume to make their production profitable.

But somehow these obvious truths do not seem apparent to many of the producers of man-made fibers. There seems to be a feeling, strong among many of them, that they should direct their message about their fiber's advantages directly to consumers, by-passing the textile industry. And so with a total advertising expenditure that seems to increase every year, makers of man-made fibers outdo each other in extravaganzas of promotion, seeking, in the pages of mass magazines, to overwhelm consumers with self-praise of their products. But are consumers really impressed?

Are consumers really going to inform themselves about the distinctions between the increasing number of man-made fibers? When they go shopping will they insist that the garments or home furnishing fabrics they buy contain fiber A and not fiber B? Will they ask for one company's nylon or acrylic or dinitrile fiber and not another company's? Of course they won't. It is an open secret that consumers just don't act that way. If the great technological effort, the enormous investment of capital which is going into the development of newer fibers is to be made permanently fruitful it is clear that something more is needed than lavish advertising in consumer magazines and on TV.

In addition to costly promotions on the consumer level what is needed is reasonable instruction on the industry level. If these new fibers are to find a permanent place in textiles, millmen must be told how to spin and weave and knit them; dyers how to color them; cutters how to fashion them into garments.

This essential task of education, on the industry level, is one to which MODERN TEXTILE MAGAZINE is dedicated. With the active help of the technical experts among the yarn producers, we will continue to do the best possible job through our editorial pages. However, this job, in order to be most effective, should be supported by each of the producers in the form of continuous, informative advertising.

A. H. McCullough

PUBLISHER

OUTLOOK IN TEXTILE MARKETING

By ROBERT C. SHOOK, Textile Economist

Textiles Not Sharing General Good Business

1956 so far has been a successful year for most businesses and for business as a whole. Gross national product and disposable income have continued to advance into new high ground. Despite a sharp letdown in residential construction and the auto industry, total manufacturing activity has been maintained fairly constantly on a high plateau.

Despite this expansion in total economic activity, 1956 has not been an encouraging year for textiles. Although retail sales of textile-apparel items have shown consistent gains, curtailment of manufacturing operations has been substantial. In synthetic fabric field, particularly, prices have been far from satisfactory, and have shown little sign of improving so far in the fall season, when demand usually picks up.

Retail Buying Cautious—Demand this year has developed more slowly than usual. This to some extent reflects overloaded position of retailers last spring when selling weather turned out so badly. Open-to-buy was cut sharply at that time. A normal operating policy has not yet been generally restored.

Demand at fabric level, particularly in synthetics, has also suffered because of fabric inventories that had previously been built up. Unfortunately, no accurate, comprehensive or timely statistical information is available about size of such fabric stocks. Considering sustained level of retail sales, and sharp curtailment in mill activity, it is easy to see that substantial amount of inventory liquidation must already have occurred. If full facts could be known, market would probably be less affected by rumors and unofficial reports that mills are holding gray goods for converters, for example, or that finishers are holding stocks of finished goods which have not yet been ordered out.

Change for Better Now Seen—Two factors which have been most unfavorable to normal activity in primary markets—previous overproduction and tight buying policy of retailers—have now lost much of their earlier potency. Much stronger buying movement by retailers for additional fall merchandise and for initial spring items can be expected to develop shortly. This movement will fall upon markets which have gained substantially in statistical strength through continued curtailment of synthetic mill activity.

Basic producers have tended to ignore favorable developments which have occurred principally at retail level. Not only have sales of textile-apparel items averaged above a year ago for year to date, but industry will find, in addition:

That consumers are trading up to better quality and more expensive merchandise in practically all departments. Novelty and good styling are powerful sales stimulants.

That items which fill a special need, either performancewise or fashionwise, bring results that exceed retailers' expectations.

This favorable performance of special items has important implications for industry. They indicate so plainly that purchasing power is there that they invite more concerted attempts to develop and display type of item which will convert this purchasing power into actual retail sales and rising textile consumption.

New Products Stimulate New Interest—For example, one might ask whether sweater sales have expanded to new peaks chiefly because of acrylic fibers, or whether these fibers have done well in sweater markets because sweater volume was expanding. A great deal of weight must be given to fact that these yarns served a functional purpose which had not previously been available in sweaters, and that this proved attractive to consumers.

(Continued on Page 59)

In Leon Lowenstein's lifetime he has seen the family business started by his father with $2,500 grow to become one of the towering giants of today's textiles. Much of this growth is directly due to the merchandising ability of "Mr. L.L."

The amazing achievements of LEON LOWENSTEIN

By Jerome Campbell
EDITOR, MODERN TEXTILES MAGAZINE

BACK somewhere in Grover Cleveland's second term as president, there was a young fellow named Leon Lowenstein who was looked upon as a comer in New York baseball circles. During the bat-and-ball season he spent most of his time up at the old Manhattan Field then next door to the Polo Grounds. For a young fellow he was an unerring fielder, a hard hitter and a lightning runner.

In those days, Cy Young, the great Cleveland pitcher, used to practice in the street outside the Polo Grounds for Cleveland's games with the Giants (baseball was more informal then). Young Leon used to take a hand in those practice sessions and Cy was impressed by his ability. Cy encouraged him to think of a career in the major leagues.

But Leon's father, Morris Lowenstein and his hard-working, serious, elder brother, Abram, thought that all this baseball talk was foolishness. They wanted Leon to go on with his education, graduate from City College, and then join their thriving textile business down on Lispenard Street in lower Manhattan. But Leon was more interested in athletics of all kinds than in grinding away at his books. His enrollment for the five year course at City College, which he entered at the age of 14, was a brief one. (In those days they didn't have four year high schools.) After a few months, he left college, as he says now, 'by mutual consent' of himself and the professors.

Seeing his son had little taste for purely academic studies. Morris Lowenstein thought he might do better at more practical schooling. So he persuaded Leon to enroll at Packard Business School then on 23rd Street. But once more Leon's passion for athletics got in the way of his study of typing, shorthand and the dull intricacies of bookkeeping. When the baseball season was over, Leon transferred his activities to bowling at which he was very good. Among his achievements as a bowler was the feat of being the first to run up a perfect 300 score in the first alley built by Brunswick-Balke-Collender Co.

After a few months of bored and haphazard attendance at Packard, Leon dropped out. He told his father that he wanted to go to work. Morris Lowenstein, accepting the fact that his son was not going to be a scholar, offered to start him in the family business. But Leon, fearing too much parental and elder brotherly supervision, chose to take his first job with a concern outside the family.

His choice, however, was in a branch of textiles—a corset company, in fact. There he ran errands and made himself 'generally useful' in the familiar phrase of want ads. However, after a while he gave in to the urging of his father and brother, and at the age of 16 accepted their standing offer of a job with M. Lowenstein & Son. He was taken on at $2.50 a week working six days, ten hours a day. He started right at the bottom, sweeping floors, moving stock, making out bills of lading, delivering packages. His father and brother, he now recalls, "felt there was no job too small for me".

At that time the company was at 13 Lispenard Street, and occupied the ground floor. The Phillips Company, shirt manufacturer and predecessor of Phillips, Jones of today, occupied one of the floors above. "We had a telephone between us but it was across the street—in the office of a woolen jobber," Mr.

Lowenstein recalls. "I think his name was Clemens. The phone was between two bolts of woolens. Maybe that was what kept us out of the woolen business."

Almost in spite of himself, young Leon Lowenstein found that his interest in baseball, bowling, and various other sporting activities was yielding to a growing absorption in the intricate and difficult business of selling fabrics at a profit. His father and his brother, Abram, long accustomed to regarding Leon as a good man on a ball team or in a bowling alley, began to be proud of his success in selling cloth. "The boy", they told each other with great satisfaction when he was out of hearing, "has the makings of a good merchant after all."

He becomes a Trader

As the years passed, their confidence was more and more justified. Leon Lowenstein at the age of 21 'became a bit of a trader' as he says now, and began to put into practice the little lessons in business his father had been dropping into his ears in the five years that had passed since he joined the firm. In that year, Morris Lowenstein, a conscientious man who believed in giving credit where credit was due, changed the name of his company to "M. Lowenstein & Sons" and made both Abram and Leon equal partners.

This auspicious event took place in 1904, some 32 years before Leon was to become president of the company. In that year, things were going pretty good for the firm of M. Lowenstein & Sons. The company had been started in 1883 as a small cloth jobbing outfit with a capital of $2,500. Steady growth, steady accumulation of working capital from profits marked the progress of the firm year-in-and-year-out. In 1909, the company reached another important turning point. Sales volume that year surpassed one million dollars.

In 1918, the firm was incorporated with Morris Lowenstein as president, Abram as vice president and Leon as secretary-treasurer. Net worth was fixed at $2,750,000, an impressive sum in those days when the dollar was worth easily three or four times what it is today.

Since that day 38 years ago, figures in the millions, either dollars or yards of cloth, have been commonplace for Leon Lowenstein. To cite a few of these figures-in-the-millions, M. Lowenstein's Great Rock Hill finishing plant in South Carolina today turns out daily some 2½ million or more linear yards of finished fabrics. Sales volume of the company last year was $326,934,520 and employees in its many divisions total 22,000. With their recent acquisitions, M. Lowenstein & Sons expect to ring up $500 million in total sales for 1956.

In the years of its growth, Lowenstein has progressed from "jobbing" (which was essentially carrying a stock of finished fabrics for sale in small lots) to converting, and then on to operation of its own finishing plant (Rock Hill's first year was 1930) and finally to operating mills that produce gray goods and mill finished fabrics.

The crucial step of buying gray goods mills was taken in 1944, and the decision to take this step is a measure of the greatness of Leon Lowenstein as a textile merchant. This man, who has been described as a genius in textile making and marketing, became president of M. Lowenstein & Sons, in 1936, following the death of his brother who in 1918 had succeeded Morris Lowenstein as president.

Since acquiring its first gray goods mill, M. Lowenstein has grown rapidly in that direction until today the company is one of the largest mill-owning organizations on the textile scene. Currently it owns 18 mills and two finishing plants.

When the right moment has presented itself for acquisition of valuable mill properties, M. Lowenstein & Sons, Inc. (under the astute leadership of Leon Lowenstein) has not wasted time. Among the famous companies that have come under Lowenstein management in recent years are Wamsutta Mills in 1954 and the cotton division of Pacific Mills in 1955. These are only a few, of course. There are others too numerous for listing here. And, in addition to its gigantic Rock Hill finishing operation, Lowenstein acquired additional finishing capacity in Lyman Printing & Finishing Company at Lyman, S. C., as part of its purchase from Pacific Mills.

With such recent acquisitions as Pacific and Wamsutta, the company is now deeply engaged in making branded consumer products such as sheets, towels and pillowcases. Nevertheless the House of Lowenstein, as Leon Lowenstein likes to call it, remains overwhelmingly a cotton cloth operation although in recent years the company has increased its activity in synthetics. For the most part, all of these fabrics are intended for the big volume market. Every season, Lowenstein brings out a rich variety of patterns. So expert and market-wise are the selection of designs, that an impressively large proportion of them are popular enough with cutters to win volume orders and re-orders.

A veritable Treasure House of Designs

Behind this big print cloth operation is an organization that is one of the marvels to today's textile industry. For example, housed in a block-long "studio" at Lowenstein's new headquarters at 1430 Broadway in New York City is a staff of 160 full-time designers!! To piece out the steady stream of patterns produced by this staff, Lowenstein's stylists and merchandise managers buy additional designs from as many as 50 outside studios. And to keep artists, stylists and executives in touch with the fruitful source of design inspiration found in the historic past, the Lowenstein fabric library has on file over 800,000 designs in books, some of which contain original fabric swatches going as far back as Civil War times. Mr. Lowenstein remarks that a study of these old pattern files proves "there is nothing new under the sun."

Another treasure house of design material is the racked stores of etched printing rolls at Rock Hill. Carefully indexed are literally thousands of rolls ready to go into production again if the New York office flashes word that a run of yardage of a certain design is wanted.

As the biggest of all print cloth manufacturers, Lowenstein currently turns out almost a billion yards of cloth a year at the Rock Hill and Lyman finishing plants.

Directing this tremendous textile operation from his big comfortable office on the fourth floor of 1430 Broadway, Leon Lowenstein, now 73 and reserving for himself the title of chairman of the board, has reason for justifiable pride in the "House of Lowenstein", one of the greatest textile companies in the world. He is also proud of the fact that since the company became publicly owned, it has never skipped

(Continued on Page 70)

How IRC Nylon Behaves in Carpets

By Dr. T. G. Finzel and M. Romer
INDUSTRIAL RAYON CORP.

As a result of increased interest in nylon for floor coverings, we present the first of four articles prepared from a study of carpets made of Industrial Rayon Corporation's New Nylon blended with rayon. This first installment is devoted to the relative cost and appearance of various blends. Subsequent articles will deal with other factors related to the performance and service qualities of these blends.

IN DIRECTING the initial marketing of its New Nylon Staple fiber to the floor covering field, Industrial Rayon Corp. selected an area in which the fiber would make important contributions.

The predominant properties of the New Nylon are a high extensibility, toughness, resilience, thermoplasticity, resistance to abrasion and a considerably improved affinity for dyestuffs. These are characteristics generally regarded as desirable features of a carpet fiber.

As a result of the conviction that the fiber could be advantageously used by carpet manufacturers, Industrial Rayon geared an intensive program of laboratory and service tests to the application of its fiber to floor coverings. This program and actual mill tests confirmed that the properties of IRC nylon are uniquely "tailor made" for the carpet industry.

The dependability of supply and stability of price of nylon are added factors of importance to the carpet manufacturers.

The test results also established that the New Nylon Staple is not only an excellent fiber for floor coverings when used 100% but also has distinct advantages when blended with other fibers.

In a study of the use of the New Nylon Staple in blends, a thorough evaluation was undertaken to determine the most suitable combinations with rayon. The study was made with the realization that the three major factors affecting receptivity to a carpet are cost, appearance and performance. These factors, which of course apply to virtually all products, add up to what may be termed the selling power and value of the floor covering.

The criteria of cost and appearance as they apply to various nylon and rayon blends in floor coverings are analyzed in the following presentation. The factor of performance will be reviewed in subsequent articles.

Cost

Because of the difference in cost of the two fibers forming the blended fabrics in this project, more than customary attention has been given to the cost factor.

A cost structure developed for a stock dyed, tufted fabric, containing two lbs. of pile yarn per square yard is shown in Table I. This construction is the same as that used in the carpets on which this study is based.

Since mill costs and prices are subject to many variables, an attempt was made to arrive at plausible figures reflecting the experiences of a number of manufacturers representing a cross-section of the industry. It is emphasized that the yarn prices used are approximations based only on cotton system spinning. The cost figures are a necessary assumption for comparative purposes in this report. No attempt should be made to use them as a basis for comparison with current selling prices.

Mill margins are obtained simply by subtracting raw material and waste costs from yarn selling prices. The mill margin for stock dyeing and spinning includes overhead, profit, etc. The mill margin for tufting includes profit, tufting cost, other materials, mill overhead, sampling, selling, etc.

Cost ratio variations of nylon and rayon are noted in Table II and Fig. 1. A comparison of these cost

TABLE I

HYPOTHETICAL PRICE STUDY
(Based on cotton system of spinning)

A — FIBER TO YARN*

Blend Nylon %	Blend Rayon %	Fiber Cost/Lb.	Waste @ 4%	Margin—Stock Dyeing & Spinning	Yarn Price Per Pound
100	0	1.20	0.05	0.57	1.82
50	50	.80	0.03	0.50	1.33
40	60	.72	0.03	0.49	1.24
30	70	.63	0.03	0.47	1.13
20	80	.54	0.02	0.45	1.01
10	90	.45	0.02	0.44	0.91
0	100	.37	0.01	0.42	0.80

B — YARN TO FABRIC**

% Blend Nylon	% Blend Rayon	Yarn Cost	Margin For Tufting	Wholesale Price	Retail Price @ 40% Markup
100	0	3.64	4.00	7.64	12.70
50	50	2.66	3.84	6.50	10.85
40	60	2.48	3.78	6.26	10.40
30	70	2.26	3.76	6.02	10.00
20	80	2.02	3.72	5.74	9.55
10	90	1.82	3.69	5.51	9.20
0	100	1.60	3.64	5.24	8.75

* (See Table III for construction.)
** (32 oz./square yard face material. See Table IV for construction.)

TABLE II

COST RATIO TABLE

Blend % Nylon	Blend % Rayon	Fiber Cost Ratio	Yarn Cost Ratio	*Fabric Cost Ratio
100	0	3.24(+224%)	2.23(+123%)	1.45(+45%)
50	50	2.15(+115%)	1.66(+ 66%)	1.24(+24%)
40	60	1.94(+ 94%)	1.54(+ 54%)	1.19(+19%)
30	70	1.70(+ 70%)	1.41(+ 41%)	1.14(+14%)
20	80	1.46(+ 46%)	1.26(+ 26%)	1.10(+10%)
10	90	1.22(+ 22%)	1.14(+ 14%)	1.06(+ 6%)
0	100	1.00(0%)	1.00(0%)	1.00(0%)

* Ratios based on retail prices.

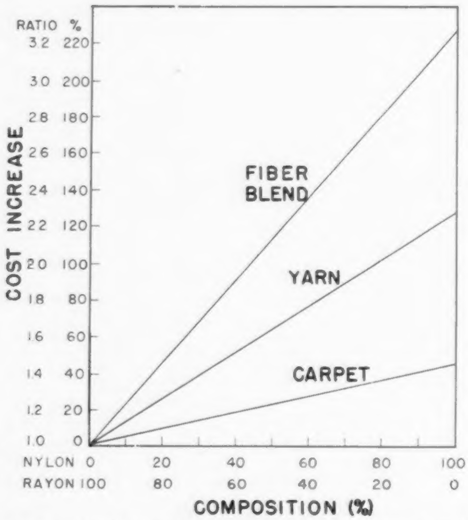


Fig. 1—Hypothetical Cost Ratios of Nylon-Rayon Blends
(Carpet ratios based on retail prices)

differentials with the improvements in quality that can be achieved with various blends will be shown in the final article of this series.

Appearance

In evaluating the appearance and performance of carpets, seven blend variations were produced under commercial manufacturing conditions. Yarns were spun to closely controlled counts and twists (see Table III) and subsequently tufted and finished, using accepted standard practices (see Table IV).

The seven fabrics were subjected to a series of laboratory and service tests and were evaluated visually and subjectively for appearance, handle and resiliency. This subjective analysis was intended to approximate the appraisal of a consumer buyer at the point of sale.

For the purposes of this subjective or human opinion test, the above three properties were defined as follows:

Appearance: The aesthetic appearance of the surface, clearness of tuft definition, and the ability of the yarn to hold contour and shape.

Handle: Feel for bulk and density of the pile.

Resiliency: Feel for springiness of the carpet pile.

A large group of individuals selected from different segments of the carpet industry were asked to judge

(Continued on Page 47)

TABLE III

YARN CONSTRUCTION DATA

COUNT			Single	Plied
Cotton Count	Woolen Yds./oz.	Yards Per Lb.	Twist TPI	Twist TPI
2/2	53/2	840	4.25 (Z)	4.75 (S)

Nylon Component—IRC New Nylon Staple, 15 denier, 3" bright.

Rayon Component—15 denier, 3", bright

Yarns

100% nylon
100% rayon

Blends

50% nylon 50% rayon
40% " 60% "
30% " 70% "
20% " 80% "
10% " 90% "

TABLE IV

CARPET CONSTRUCTION DATA

All seven yarns (see Table III) were tufted simultaneously on a 12 foot wide cut pile machine, commercially piece dyed (with the absence of dyestuff) and backsized with white latex compound.

Construction:
- Gauge — 3/16" (5-1/3 ends/inch)
- Stitches — 7-1/2 per inch
- Pile Height — 5/8"
- Backing — 100% cotton duck
- Backsize — Latex
- Approximate Pile Weight — 32 ozs./sq. yd.

TABLE V

SUBJECTIVE EVALUATION
RANKING SCORES
Lower number indicates higher rank.

Composition	Average Ranks: Appearance	Handle	Resiliency	Overall Average
100% nylon	2.75	2.14	2.08	2.32
50% nylon-50% rayon	2.42	2.96	2.54	2.64
40% nylon-60% rayon	3.25	3.00	3.25	3.17
30% nylon-70% rayon	3.58	4.11	3.50	3.76
20% nylon-80% rayon	5.42	4.61	5.62	5.22
10% nylon-90% rayon	5.58	5.96	5.42	5.65
100% rayon	5.00	5.21	5.54	5.25

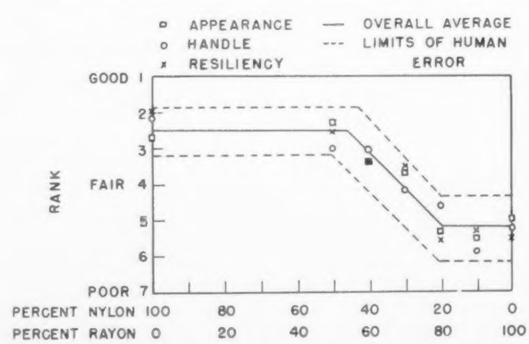
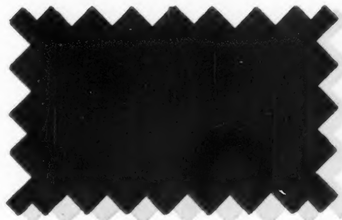


Fig. 2—Subjective Evaluation of Nylon-Rayon Blends

Now from National three widely useful stabilized diazonium salts

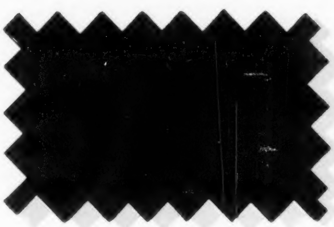
NATIONAL® BLUE 3BVS SALT

Produces reddish-blue shades when coupled with National Naphthols AS-OL, AS-BG, AS-RO, AS-BO and AS-BR; greenish-blue with other naphthols except AS-G which yields a dull orange shade. Full properties and application data are given in our Bulletin 431, available from our nearest office.



NATIONAL BLACK K SALT

Couples with National Naphthols AS-BG, AS-BS and AS-SW to produce a jet black. Yields reddish-black when coupled with other naphthols. Ask our nearest branch office for our shade card (Bulletin #430) giving complete data on properties and procedures for package dyeing, naphtholating and printing.



NATIONAL BLUE 2BS SALT

This salt produces greenish-blue shades when coupled with National Naphthols AS-D, AS-TR Disp. and AS-E; reddish-blue shades with other naphthols except AS-G Disp. which yields a bright yellow. For properties, naphtholating and developing procedures, get our shade card (Bulletin #440) from our branch office nearest you.

Coupled with various National Naphthols these National stabilized diazonium salts all possess very good-to-excellent fastness to light, washing, soda boil and other wet processing. They are applicable by all the dyeing and printing processes generally employed for dyes of this type. Many combinations can be discharged to excellent whites with hydrosulfite discharge pastes.

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Allied Chemical

REPORT FROM EUROPE

BY SPECIAL CORRESPONDENT

British mills seek lower wage costs; Germans Introduce spun-dyed perlon in four colors

PARIS—Britain's bottled-up inflationary pressures are threatening anew that nation's man-made textile—and other natural fibers—industries. For the first time since they were started 24 years ago, rayon manufacturers have begun pressing to discontinue wage advantages rayon workers enjoy compared with other textile employes.

The move began in Lancashire where both Cotton Spinners and Manufacturers Association and Rayon Weaving Association a few weeks ago protested to Weavers Amalgamation that 15% rayon workers' bonus must go. Specifically, mill owners' groups would like to reduce rayon weavers' pay by 30 shillings ($4.20) from the 10-pound ($28) average weekly earnings. (The rayon bonus was instigated because it was felt that spinning and weaving cellulosic yarns required more skill than working with cotton—that was back in 1932.)

British Textile Activity Slower—In general, Britain's textile activity during first half of year—up until summer vacations started—was below year ago. Cottons suffered worst, with profits down about 35%; rayon earnings dipped about 8%, but woolens held their own. Wool mill men recently underscored textile trade's inflation fears. They issued statement supporting declaration recently made by British Federation of Industries urging stiffer fight on high costs.

British cotton traders, hard pressed by Japanese imports, are battling, meanwhile, to hang on to own home market. Sir Raymond Streat, Cotton Board chairman, recently announced that his industry would spend 250,000 pounds ($700,000) starting this fall to push sale of domestic cotton goods. The industry is ready to go on spending this money for two years, although it hopes an earlier favorable sales trend will make such expenditures unnecessary.

Germany's Man-Mades Remain Strong—Intense modernization of Germany's post-war textile industry has apparently paid off well. A group of 65 corporations recently issued a report noting that 1955 dividends averaged some 6%—this during a year of generally poor operations elsewhere in Europe. This year's earnings are likely to be substantially as good although Perlon producers have competitive problem to solve.

Germany has been producing true man-made fibers and filament yarns at rate this year of 1,250 metric tons a month. However, internal requirements necessitate imports of about 100 tons monthly. United States has been furnishing about two-thirds of needed synthetic filament yarns and fibers, with remainder coming from Europe.

Perlon Prices Cut—But last July 1, Germany—as part of Economic Minister Erhard's anti-inflation program—reduced import tariffs on synthetic fibers from 15 to 12% and from 20 to 15% on synthetic filament yarn. Although this price reduction, in itself, is relatively unimportant, it swiftly induced German producers to cut Perlon prices by amount of duty cut.

With German production rising regularly each year—1956 synthetic output is running 40% over 1955—mill men feel that eventually they will not require imports to meet domestic market needs. Meanwhile, they do not want to give other countries—including U. S.—opportunity to solidify their position in Germany. And hence, Perlon price decline is regarded as smart move which, over short run, will prevent influx of U. S. man mades and, over longer range, will tend to keep home market for domestic producers.

Spun-Dyed Perlon Being Offered—Farbenfabriken Bayer showed spun-dyed Perlon filament yarn at Spring Frankfurt Trade Fair. Last month this new form of Perlon was offered in trial lingerie samples. This month it is being commercially sold in four colors. Other colors will be added. Prices plus U. S. tariff, however, are expected to prevent any export movement from developing—but that is no certainty.

Allied Chemical's

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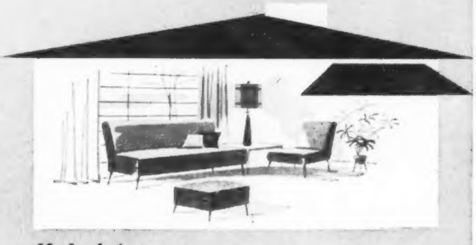
tensile-tough nylon

NYLON HEAVY YARNS

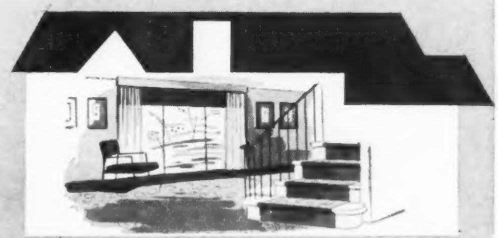
COMBINE DURABILITY, EASE OF DYEING, NEW SURFACE INTERESTS



Upholstery

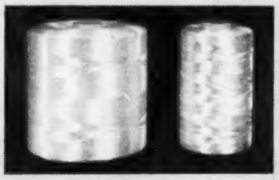
Where beauty must be durable, Caprolan *deep-dye* nylon heavy yarns (2,000 denier and up) make it easy to obtain uniform shades of high fashion colors in high strength nylon yarns.

The product of over 12 years' original research by Allied Chemical, Caprolan has all the qualities normally expected of nylon and some new ones of its own. Most important of these for decorative fabrics is an unusual affinity for almost any class of dyestuff. When Caprolan is combined in fabric with other nylon, the greige goods can be dyed in a single bath to give new and interesting tone-on-tone effects.

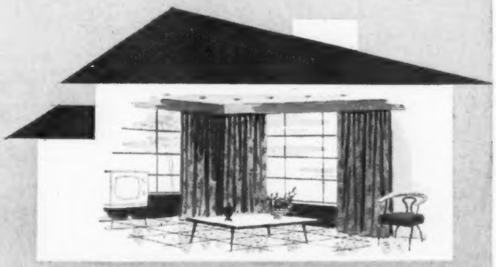


Carpets

Caprolan offers you completely new design opportunities, as well as excellent hand and unusual and lasting whiteness, with no appreciable yellowing in storage. Available for both decorative and industrial fabrics, Caprolan heavy yarns can be engineered to your specification from 2,000 to as high as 50,000 denier. It can be ordered on knotless 30-pound and 10-pound parallel, non-returnable tubes, providing you longer runs between creelings, shorter conditioning cycles, ready dyeability, and the elimination of costly finer denier inventories. For more information about Caprolan nylon heavy yarns, call or write us today.



KNOTLESS 30-LB. AND 10-LB. PACKAGES ON PARALLEL, NON-RETURNABLE TUBES!



Draperies

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REPORT FROM JAPAN

Japanese study more quota schemes to disarm U. S. industry's efforts to cut down imports

By B. Mori

OSAKA—All signs point to broader export-quota system for 1957 on shipments of textile products to United States. Aim of program is to sell as much as formerly—or more—to the U. S., but to diversify exports so that no narrow segment of American textile industry feels pressure badly enough to ask for more Government protection.

Americans May Object—American competitors reject, in principle, idea that Japanese-imposed quotas offer them any but temporary "protection". So it is doubtful whether new system will have desired effect of placating U. S. textile industry.

There is big pressure here behind move to include many more types of apparel and other secondary products in quota system. This move recognizes fact that other products, in aggregate, are more important than sports shirts and blouses which are now only specific apparel items under quota.

Japanese Self-Discipline on Table Linens— Meanwhile, manufacturers and exporters of table linens have placed their own quota on rayon-cotton damasks, at level in line with exports of recent years, though below peak. Purpose here is somewhat different: To prevent overloading of American market with low-quality goods, to detriment of prices and orderly marketing. There is no evidence that American pressure influenced this decision. Shipments of these goods so far this year are little below 1955.

Is U. S. State Department Intervening?—U. S. State Department is reported to have made approaches to Japanese Government concerning 1957 quotas. Some reports hint at feelers for Government quota agreement. This seems unlikely. It is more likely that U. S. Government is urging Japan to work out quickly quota system which meets American textile industry's objections as much as possible, in order to take some political pressure off the Washington Administration.

It is unlikely that quota for cotton piece goods will change much, if at all, from present 150 million yards over-all figure. But there will be important adjustments in specific quotas within that figure—again, to force diversification. Japanese gingham industry will recommend specific quota of 50 million yards instead of the present 70 million.

Quota May Not Be Filled After All—Meanwhile it becomes increasingly doubtful that 150 million yard cottons quota will be filled this year. The 95 million yard specific quotas on printcloth, gingham and velveteen have already been filled up to almost 70 million yards.

Another facet of quota plans is Government's decision to restrict exports of spun rayon fabrics to certain European countries, on grounds that the shipments have increased too rapidly recently. This move is probably designed to show Japan's "good intentions" so that European countries involved may feel more kindly disposed when Japan asks them, at GATT conferences this fall, to remove their ban against giving Japan most-favored-nation treatment.

Rayon Staple Output Rises—Viscose staple production continues to expand gradually month by month, to make a total of more than 300 million pounds for first six months (almost 25% above same period of 1955). Filament yarn production continued to gain at much slower rate, as did cuprammonium yarn. Total production of synthetic fibers in first half was 28 million pounds, compared with 14.5 million year earlier. Acetate output jumped from 2.7 million to 6.5 million pounds.

Silk Producers Have Troubles, Too—Popularity of cartelization has reached silk industry which, through control arrangement, hopes to reconcile slowly-growing but inadequate cocoon production with its over-expanded reeling capacity. Through either cutback in capacity or controlled distribution of cocoons, it is hoped to prevent reelers from competing among themselves to obtain raw materials for their excess machinery thus driving up prices of raw materials above economic point.

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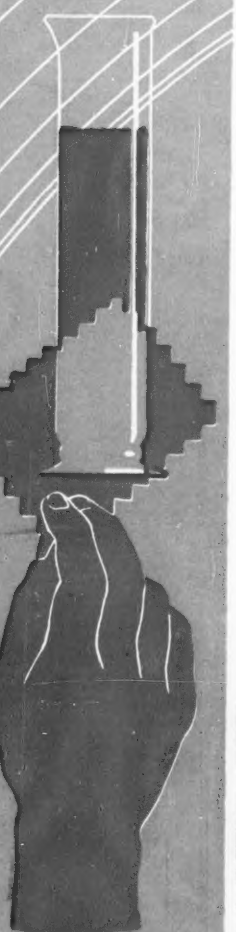
DYEING and FINISHING Section



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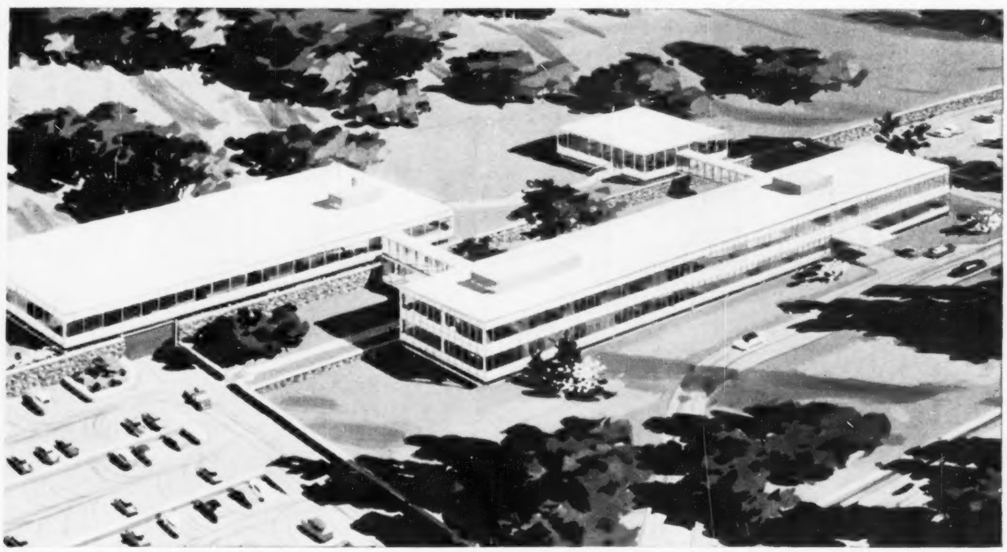

● New Geigy Home, Saw Mill River Road, Ardsley, New York.

Pad-Dyeing of Acetate, Nylon Now Possible with New Dyes

PAD-DYEING of acetate and nylon piece goods can now be done economically with superior results according to Otto Poltersdorf of Pad-Dye Corp., Paterson, N. J. His company has developed and tested a new line of patented water-soluble acetate dyestuffs, he reports.

With these dyes, Pad-Dye Corp. has successfully padded over two million yards of acetate and nylon piece goods in the last year in all shades from pastels to black. Application of the dyes, Mr. Poltersdorf says, is quite simple and may be done on conventional pad-dyeing equipment found in most plants. Here is how these dyes are used:

The determined formulation of dyestuff is added to cold water and stirred into solution. The volume is then brought up to the required dilution and the temperature raised to 110—130°F. This solution is then fed into the padder trough and acetate or nylon or combination fabrics containing either of these fibers are padded in the gray, at an average speed of 100 yards per minute, at 3 to 5 tons pressure.

As many as 40,000 yards have been padded from a single solution. The gray goods are then taken from the padder and placed on a jig for a boil-off and topping. The jig bath contains only the boil-off chemicals. Since the goods are wet, they may be dropped at 160°F. Two to four ends of boil-off, raising the temperature as high as is necessary, is usually adequate to complete the job. The goods are then rinsed and shelled up preparatory to finishing.

If any shading should be necessary, and that can be determined by sampling after the first two ends of boil-off, the same Pad-Dye acetate colors may be added to the jig to adjust the shade while the boil-off is being completed.

Aside from the time saving that this operation offers the dyer, Pad-Dye Corp. reports other advantages from the use of its Pad-Dyes.

It is said for example, that Pad-Dye colors offer equivalent or superior money value to the normal range of dispersed dyestuffs.

It is also claimed that when used as dyeing colors they offer a great saving, since they exhaust evenly and dye to true shades at low temperatures and have no preferential rate of exhaustion.

The Pad-Dye method is said to permit completely level dyeing from end to end and from selvage to selvage. It is also claimed that it offers a method of achieving automatic uniformity in every roll that is padded due to the fact that the goods are being immersed in a completely homogeneous solution, and due to the fact that these dyestuffs do not become substantive until the temperature reaches 140°F. Therefore, since they are padded at temperatures of 110—130°F and are not substantive at these temperatures, the action is mechanical and there is no tailing off, end-to-end shading, or selvage discoloration.

Combination acetate and rayon fabrics have been successfully padded. Pad-Dyes have been found to leave rayon white, thus allowing these goods to be entirely padded in the same operation, or to leave a cross-dye effect. All deniers and weights of nylon piece goods have been successfully padded in the gray and then boiled-off in two to four ends in the jig, using various combinations of detergent, caustic and solvents, at temperatures approaching the boil. It has been found that high temperature curing and heat setting does not alter the shade of these dyestuffs.

A complete range of Pad-Dye soluble acetate colors is presently available allowing formulation of all shades, including blacks. In addition to this line of water soluble direct acetate dyestuffs, Pad-Dye Corp. offers a completely soluble developed black that may be padded onto the goods and completely developed and scoured in approximately 6 to 8 ends on the jig.

IRC Nylon

(Continued from Page 34)

these fabrics in accordance with the above definitions and to rank them 1st through 7th. Total score for each characteristic was then summed and averaged. In addition, each characteristic was assigned an equal weight factor, and the average score from each was combined into an overall rank for the fabric.

Table V records the data obtained, and Fig. 2 shows the results. Dotted lines in Fig. 2 represent the rank bias or human error to be expected in judgment. No calculations were developed for the area between 50 and 100% nylon because there was no apparent market interest in these blends. Furthermore, preliminary tests indicated no significant differences in subjective evaluations within this area. Analysis of the curve reveals two plateaus, one between 0 to the area between 20-30% IRC nylon and the other between 50-100% IRC nylon. The flexing point, or the distinguishable change in fabric appearance and handle, starts to occur somewhere in the area of 30% IRC nylon.

On the basis of these findings, it can be assumed that one could not very well distinguish differences among 0-20% nylon fabrics, and similarly could do no better among the fabrics having a nylon content from 50-100%. He could, however, recognize the difference between a fabric containing less than 30% nylon and one containing more than 50% nylon. In the area between 30 and 50%, visual and handle differences change gradually and are difficult to discern as illustrated in Fig. 2.

The following articles of this series will describe other carpet characteristics of the New IRC Nylon Staple blended with rayon. The data, as evaluated from both laboratory and actual floor tests, will cover resistance to crush and recovery, wearability and serviceability, and will be accompanied by a description of the techniques used in the evaluation. ■

Dyeing & Finishing

Chemical Anti-Static Agents

They are getting better, and you can expect still greater improvements in the future

STAFF PREPARED

THE effects of static electricity in the processing and manufacture of textiles are mostly undesirable effects. How undesirable these effects are will depend on many factors, one of the most important of which is the chemical nature of the fiber. As our fibers become more nonconducting, and as they become less moisture-absorbing, each potential source of trouble due to static becomes greater. That is why, when we deal with the new synthetic fibers, every potential source of trouble from static becomes an actual source of trouble unless we take special steps to control the static. In the case of natural fibers, such as cotton and wool, many of the potential sources of trouble never actually break out into real trouble, but when conditions are right, trouble will be there.

A writer recently pointed out that static electricity could cause four major problems in textile manufacturing:

1. Reduction of output
2. Lowering of quality
3. Increase in waste
4. Hazards to personnel.

Each of these major problems is potentially present in most textile operations. They may exist in blending and carding down through drawing, sizing, knitting or weaving, and even in the final operations of inspection and packing.

In carding woolen, cotton and synthetic fibers, static charges may cause the fibers to load on the cylinders, and may even prevent the fibers from forming a web.

During spinning, static electricity may cause the fibers to repel each other, thus producing uneven yarns. The yarn may be attracted to various parts of the machinery and thus broken ends may result, or it may be repelled from the guides, causing loops and breaks.

During sizing, the yarns may repel each other to give beams with the yarns badly aligned. During weaving, static electricity may cause lint and dirt to be attracted to the yarn, and this may accumulate on the heddles and drop down in one mass to be woven into the goods, thus causing seconds. Also, warp yarns may repel each other to give an uneven weave, and static electricity may even prevent filling yarns from coming off free from the shuttle, causing breaks and loom stoppage.

Finally, at the end of wet finishing, the fabric may emerge from the dryer with enough static electricity to resist folding, and electrified enough to attract lint and dirt from the air or floor.

The potential troubles due to static in textile manufacturing are almost endless in number. As we increase our operation speeds, and particularly as we use more and more of the new synthetic fibers, these potential troubles become real ones.

We have thus far used the term "static electricity" rather glibly but, undoubtedly, most of us have difficulty in defining this term. Perhaps we confuse the effects of static electricity with the actual thing itself.

The word "static" is very definite, and the definition given to us in the dictionary is quite satisfactory. The dictionary defines the word "static" as pertaining to bodies or forces at rest. Therefore, static electricity is electricity at rest. But what of the word "electricity"? Our dictionary doesn't give a satisfactory answer, and neither do our textbooks. Suppose we move back into the past in order to find out where the word "electricity" came from.

As long ago as 600 B. C., Thales, a Greek, knew that amber when rubbed would attract small pieces of paper and other objects. The Greek name for amber was "elektron" and the Latin "electrum." When Sir William Gilbert, about the year 1600, found that many other substances besides amber have the property of attracting bits of paper when rubbed, he gave the Latin name of "electrica," meaning amber-like, to such materials. Now, the English name corresponding to the Latin "electrica" becomes "electrics." The word "electricity," however, was first used by Sir Thomas Brown in 1646. He used this term to mean the active principle, or force, which appeared in electrics after they were rubbed, and which force causes attraction for bits of paper.

Today, of course, we have various theories which explain this force on the basis of atomic and molecular configuration, but these are only theories. We still have no better definition for "static electricity" than that which Brown put forward 300 years ago: namely, "static electricity" is that force which causes the attraction of small bits of paper to an object after the object has been rubbed. We must remember that this force may be generated by many other methods and may be evidenced by other phenomena, but it is still the same force.

What Makes Static?

Although the fundamental explanation as to how static electricity can be generated in textile fibers is quite complex, for our purpose the examination of the most important mechanism involved should suffice.

When any two neutral dissimilar substances are brought into contact, electric charges occur in pairs of positive and negative kinds. Negative charges that is to say, electrons, migrate to one substance, making that substance negatively charged, whereas the other substance, having lost electrons, becomes positively charged. Now, the positive charges on the one substance are exactly equal and balance the negative charges on the other substance. The number of charges developed in the substances depends on the chemical nature of the substances, the extent of area in actual contact, and the pressure between the two substances. We only become aware of the presence of these charges when the substances are separated. For then, if one substance is a nonconductor, such as one of the new synthetic fibers, the charges which it held

become entrapped, and the fiber becomes negatively or positively charged. If the other substance is a conductor, then its charges are almost immediately dissipated, and this substance becomes neutral. If the second substance, however, is also a nonconductor, it then shows a charge on separation from the fiber, which is equal to but opposite in sign to that on the fiber.

Can Static be Prevented?

Now the question comes up, "can we do anything to prevent the formation of static electricity in these new textile fibers?" Theoretically, the answer is a simple "yes." We could either neutralize the charges as soon as they are formed on the fibers or conduct away these charges as soon as they are formed. The practical accomplishment of either of these is difficult and many laboratories throughout the world are at work on the problem.

The first method, which involves neutralizing the static charges as soon as they are formed, has not met with general practical success so far. Limited results have been obtained only in the manufacturing processes by using the discharge from either radio-active materials or electrical high voltage sources to neutralize the static. It is obvious that such methods could not be used to control static for consumer use.

The second method, which depends on conducting the static charge away from the trouble spot as soon as it has formed, so far has proved most successful and seems to offer the greatest promise for the future.

There are obviously two paths whereby static electricity can be conducted off the textile. First, let us consider grounding. The ground or earth may be considered to be an infinite reservoir of positive and negative charges. If a charged fabric is grounded, it must sooner or later lose its charges. Unfortunately, however, textiles are inherently poor conductors, and those that develop static electricity to the greatest extent are the most non-conducting. Obviously, while grounding a textile is a theoretical technique for removing charges, it can mean nothing unless the conductivity of the textile is so changed by treatment that it can quickly conduct a charge to the ground.

Secondly, we have the mechanism of discharge of static electricity to the atmosphere. This is related to the humidity of the atmosphere, the presence of gases and other substances in the air, and, most important, to the surface conductivity of the textile.

Chemical Anti-Static Agents the Answer

In theory, the use of a chemical anti-static agent on a textile is the ideal method for controlling static electricity. A chemical anti-static agent can be put on the fiber, and it will travel along with the textile to do its work at every point. Also, from the consumer standpoint, the use of chemical anti-static agents is the only possible answer to static control in textiles.

This does not mean that there are no problems in connection with chemical anti-static agents. There is the problem of where to apply the anti-static agent. Should it be easily washed off, or should it be fast? What about the effect on the hand, on strength and on the appearance of the fibers? We often must take into consideration its compatibilities with many materials. We must think about whether it will affect the light-fastness of the colors, or whether it will develop an odor. In fact, use of chemical anti-static agents pose many problems. But, only by the use of chemical anti-static agents can we look for a real solution to the problem of static control in textiles.

The mechanism whereby most chemical anti-static agents do their work is in the field of conductance. Now, even if an anti-static agent also makes use of other processes, it always has some effect in improving the surface conductivity of the fiber and thereby in helping charges to go more readily to ground or to the atmosphere.

It must be borne in mind, however, that, while most chemical substances applied to a fiber increase the surface conductivity of the fiber, some chemicals are many times more effective than others in this respect. This is due to some fundamental relationship not understood and is only partially related to the conductivity of the chemicals themselves in solution.

There are indications, however, that the improvement in surface conductivity caused by chemical anti-static agents is related to the type of film the agent forms on the fiber, and to the way in which the molecules are oriented on the fiber.

Another way whereby a chemical anti-static agent can do its work is in the matter of hygroscopicity. This is particularly important with the new low-regain synthetic fibers. The presence of moisture on the surface of a fiber assists in the lowering of surface resistance and hence improves the rate of charge removal.

Hygroscopic anti-static agents thus can do part of their work by attracting molecules of water to the surface of the fiber. This water also serves to activate further the chemical anti-static agent by partial solution of the active groups of the agent in the water.

The True Anti-Static Agent

The true anti-static agent is designed for one special job, that is, its anti-static properties are developed to the fullest. While anti-static agents may have softening properties or some other properties that are desirable, their anti-static properties are the main thing. In general, a true anti-static agent will have several times the anti-static powers of an equal weight of a finishing agent with anti-static properties.

Today nearly every manufacturer of chemicals for the textile industry is offering at least one anti-static agent. Many offer several. Only a handful of these agents have their anti-static properties developed to a high degree. None of the anti-statics so far developed even approach the ideal.

Several of the anti-static agents among this handful affect the light-fastness of colors and develop yellowing on storage of the goods. Among this small group, some work well on nylon but are ineffective on some of the other fibers. Some of these true anti-static agents have excellent properties in themselves but are not campatible with other finishing agents.

To set the requirements for an ideal anti-static agent is not too difficult. First, and foremost, the ideal anti-static agent must have an enormous amount of anti-static properties bound up in each molecule. Therefore, it would require use of all of the various mechanisms we have discussed for preventing static buildup as well as for conducting the static away. This product would have to work and be effective in small amounts on all fibers. It should be permanent to washing and dry cleaning. It should not have any color nor have any effect on the color or the light-fastness of dyestuffs. It should not change the hand or feel of the fibers. In other words, except for its anti-static properties it should act like the little man who wasn't there. *(Continued on Page 69)*

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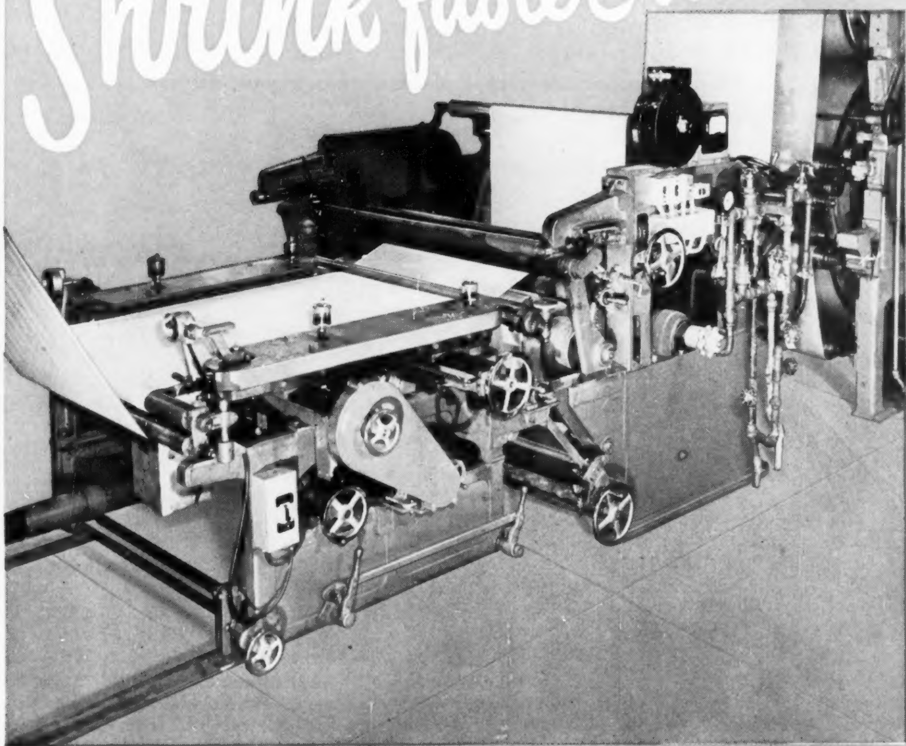

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SPOT DESIGNS

By Victor Lobl

Distribution Orders

One of the major considerations when making a spot weave is the order of distribution. We have already mentioned in the foregoing chapter* that motifs may be distributed on the cloth in a regular or in an irregular order. Now let us examine this question at closer range.

Where the motifs are arranged according to a *regular* weave pattern, such as plain weave, four, five or six harness satins, the distribution is said to follow a regular order. Any modification thereof results in an irregular order. By observing Figures 74, 79, 80 and 81 you will find the spots spread on the cloth in a plain weave order. In these cases the motif is inserted twice in each repeat in keeping with the plain weave pattern. Whereas in Fig. 83 you will note the

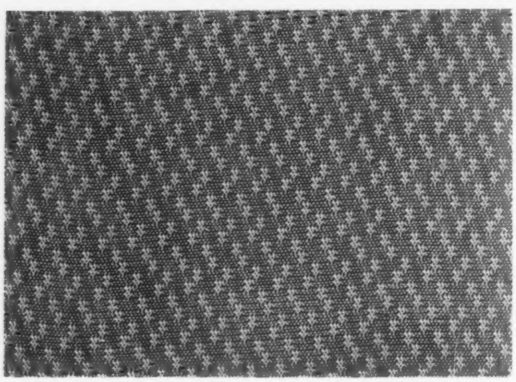


Fig. 83—Spot motif arranged in 4 harness satin order (Courtesy American Viscose Corp.)

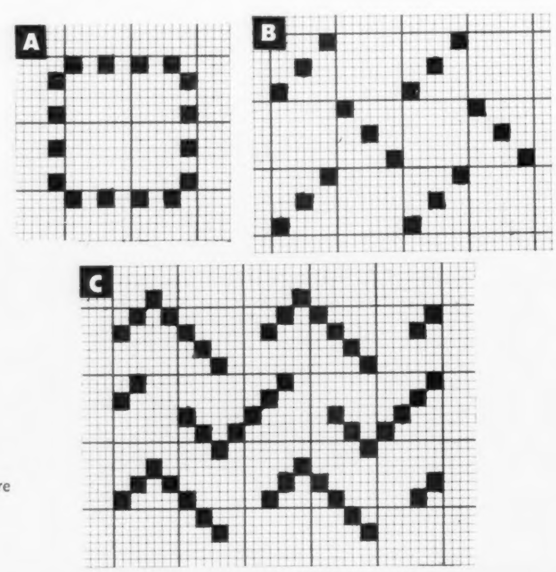
motif is arranged in the four harness satin order and follows the pattern of interlacings for that weave. The same basic principle stands true for all other regular distribution orders, namely, they include as many motifs per repeat as there are points of interlacing in the weave. Accordingly the five harness satin order has five, the six harness satin order has six motifs placed in each repeat, and so on. These systematic orders are employed where an overall regular motif distribution effect is desired.

The *irregular* orders, as the term implies, do not conform to common weave patterns. The stylist simply places the motifs where, in his judgement, they do the most good under the prevailing conditions regardless of sequence or form. Common arrangements are diagonal, horizontal, vertical lines, their combination, and many others. Obviously these figure distributions do not produce any regular overall effect but often they follow a definite, easily discernible pattern. Typical examples of irregular motif distributions are illustrated in Figs. 84a, b and c. These examples depict different motif dispositions; they are not weave diagrams. Each of the filled-in blocks represents a motif, whatever it may be. They also show the starting point in the development of ideas for a great many novel arrangements.

It is also possible to use the motif in combination with box patterns where it serves well to flourish the otherwise bare looking center of large checks. Fig. 82 is a good example of the one-figure-per-repeat arrangement. This idea receives frequent application in the dress goods line.

Apart from its aesthetic aspect the figure distribution on the cloth also bears a technical question. More often than not it is a matter of budgeting the dobby harness capacity or the number of hooks on the jacquard loom at the mill. Naturally, if more figures are in one repeat, the harnesses and jacquard hooks have to be divided among them as required. This question affects the design detail but it has no bearing on the size of the figure. Very large figures can be made with only a few harnesses.

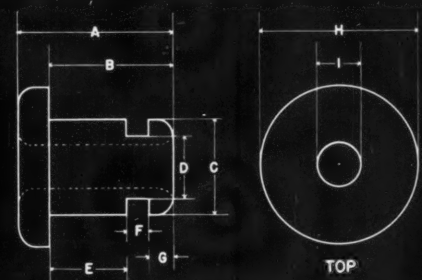
Dobby heads are built to operate from 12-25 harnesses. Beyond that requirement a jacquard loom is needed. Due to the limitation of the dobby harness capacity, practical experience has found it advantageous to keep the design symmetrical within the motif itself and in the repetition. One or two figures per repeat distribution is most common for dobby weaves. Where more than two figures are used within one repeat they are usually arranged in rows, either horizontally or vertically or both horizontally and vertically (Fig. 84a). Only very small motifs or motifs which require few harnesses can be made in satin orders if the cloth is to be produced on dobby looms. In mills where jacquard looms are available for this purpose the stylist has greater freedom in selecting his distribution order and his design.



Figs. 84 A-B-C—Designs showing irregular figure distributions

* August issue, p. 63.

PORCELAIN
GROOVED ROVERS



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MITCHELL-BISSELL CO. PATTERN NO.	A	B	C	D	E	F	G	H	I
No. 2292	3/16"	9/64"	11/64"	9/64"	1/16"	1/32"	3/64"	15/64"	1/16"
No. 1596	13/64"	5/32"	17/64"	3/16"	3/64"	3/64"	1/16"	11/32"	7/64"
No. 2454	15/64"	3/16"	.300"	1/4"	5/64"	3/64"	1/16"	3/8"	1/8"
No. 2351	1/4"	3/16"	3/8"	21/64"	3/64"	3/64"	3/32"	33/64"	15/64"
No. 2508	5/16"	15/64"	.175"	5/32"	9/64"	1/32"	1/16"	1/4"	5/64"
No. 2364	5/16"	15/64"	19/64"	15/64"	1/8"	3/64"	1/16"	3/8"	9/64"
No. 1761	5/16"	1/4"	5/16"	1/4"	9/64"	3/64"	1/16"	25/64"	1/8"
No. 2251	11/32"	1/4"	9/32"	7/32"	5/32"	1/32"	1/16"	19/32"	9/64"
No. 2549	23/64"	1/4"	21/64"	9/32"	1/8"	1/16"	1/16"	7/16"	3/16"
No. 2502	3/8"	9/32"	15/32"	25/64"	143"	1/16"	5/64"	21/32"	7/32"
No. 2181	25/64"	19/64"	17/64"	7/32"	11/64"	1/32"	3/32"	11/32"	1/8"
No. 2654	13/32"	9/32"	.325"	1/4"	5/32"	3/64"	5/64"	27/64"	1/16"
No. 2597	27/64"	23/64"	.303"	1/4"	.245"	3/64"	1/16"	3/8"	1/8"
No. 2503	37/64"	21/64"	.240"	3/16"	.070"	3/64"	.212"	7/16"	.085"

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Finally, this question of figure distribution has to be considered also in the light of the way in which a certain design and texture can be reconciliated. These fine points in styling are usually decided upon by the person or persons who have the necessary experience to judge in such matters. To be sure, the consumer of today places no restriction on the development of new design ideas except where they might harm the serviceability of the fabric.

Take-up

Any ornamentation of apparel fabrics is to be considered in the light of its visual appeal and also through appreciation of the various manufacturing problems. Price and quality are taken to be part of the manufacturing objectives. Concerning the spot weaves several important questions from both the aesthetic and technical point of view have already been discussed in the previous articles; others are yet to be touched upon. One significant technical problem that claims our attention quite often in weaving spot designs is take-up. While a detailed discussion of yarn contraction would be out of place here, we think this subject is important enough to digress briefly to point out some pertinent conditions which play an unusual part in the successful weaving of the designs under consideration.

What is take-up?

In the process of weaving, the fabrics shrink both in the length and in the width. It is not that the yarn actually becomes shorter, but the manner in which the warp and the filling bend around each other in the course of interlacing causes them to crimp, with a consequent loss of length. This crimping of the yarn is called contraction. The warp contraction is referred to as take-up, while the drawing-up in width is called shrinkage. Concerning the spot weaves, and specifically the one-beam type we are considering here, the thing to watch is the take-up at the loom. The shrinkage has little bearing on the case in point.

As a general rule, all ends from one beam should be woven with the same or nearly the same take-up ratio. When yarns of different weaves are put on the same loom beam, as is the case here, this condition cannot always be met satisfactorily for this reason.

As will be recalled, the figure weave is obtained by means of floating the regular warp in contrast to the ground weave. Obviously, such floating ends take up less than the more frequently binding companion plain weaving ends. The longer the floats are in one set of the warp as compared to the others on the same beam and the more frequently such floats appear in the cloth, the greater is the take-up variation.

Small differences in the take-up are usually overcome by the inherent elasticity of the yarn. Additional relief to this problem, when necessary, can be obtained by hanging the spot forming harnesses in the front next to the lay. Since the front harnesses require a smaller shed, the recovery from the opening stretches is smoother and more constant. Then too, excess yarn due to slack ends is pushed into the cloth by the reed more easily and constantly from the front harnesses. Modifications in the fabric construction or in the weaving conditions, such as warp tension, harness, lay and drop wire setting can be applied also, in a moderate degree, to equalize uneven take-up.

The quality and manufacturing difficulties become more and more acute as the variation in the contraction increases. A frequently occurring quality problem at this stage is *warp streaks*. While forming the figure design those ends making the spot take up less than the adjacent plain ground. As the weave changes to all plain between the spots, the warp tends to even up the tension throughout, thus causing the loose ends of the spot weave to contract at a faster rate. Consequently, there will be a higher proportion of warp deposited in that particular area which shows up as streaks. The greater the contrast between the warp and the filling color, the more prominent these streaks appear in the cloth. Black warp and white filling is probably the worst color combination in this respect. High construction, particularly a high pick count of fine yarn, tends to show streaks more than the opposite conditions. Plain weave is more susceptible to streaks and tension variations than a looser weave.

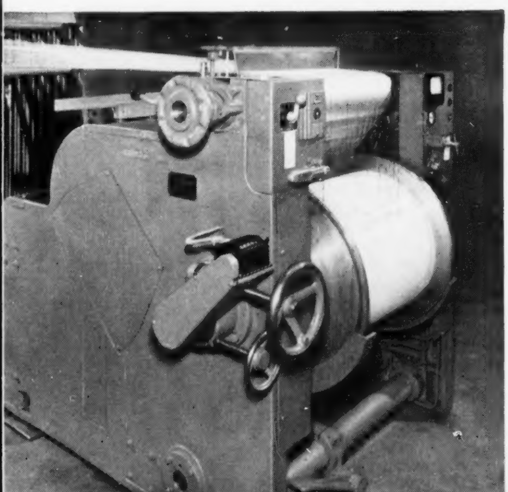
Another troublesome problem that quite often confronts those who are weaving this type of spot designs is *thin and thick places*. The pick enters more easily at points of least resistance, and that is where the floats are longer. As the weaving process changes from plain to the loose figure, the long floats of the figures offer little resistance to the hard pressing reed and allow the filling to be packed closer together than required, thereby causing a thick place in the cloth. Conversely, as the weaving process changes back to all plain, the sudden resistance of the closer interlacings on the one hand and the previously retarded forward move of the warp, which is, at this stage, bound to catch up with the advanced position of the pick gear, on the other hand effect a combination that brings about a thin place. Such a thin place spreads for as many picks as required to restore normal filling density.

Sustained insufficient take-up in some portion of the warp may slacken those ends to the point that the sagging dropwires keep stopping off the loom. These, of course, are extreme cases and such designs are simply not practicable for manufacturing.

In the light of the foregoing it is evident that the nature of the weave requires particular care in the figure distribution and in the design layout to avoid take-up difficulties. Short floats are regarded best for this type of weave although longer ones would produce more prominence to the motif. Long and relatively frequent floats which are permissible if woven from a separate beam are risky if woven from one beam with the ground. Experienced designers usually find ways to break up the looseness of the weave by adding interlacings at strategic points without significantly altering the character of the figure. Designs composed of short floats also have the advantage that they render a fuller packing appearance and that they restrict bending sideways, thereby reducing an arc-like figure contour. Fig. 85 aptly illustrates the method of making a large scale design with a series of short floats.

For an example of how a design construction can cause serious take-up difficulties in weaving let us turn our attention to Figures 86 and 87. Both of these figures are composed of a series of dots 5 x 5 in size. The difference in the two figures is this:

In Fig. 86 the ends are not tied down individually within the design. This allows them to bunch up in groups of five, thus making them strongly resistant to bending by the filling. As a result of this condition, the contraction in the figure area in relation to the rest of the warp is significantly reduced and in the course of weaving these ends will gradually become



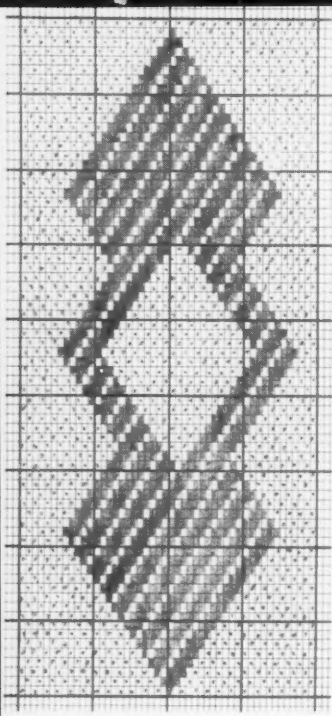


Fig. 85—Method of making a large scale design with a series of short floats.

looser. A weave of this nature tends to permit thin and thick places and if used for a fabric composed of contrasting warp and filling colors it is liable to cause warp streaks as well. These problems would become increasingly more difficult to overcome as the figures are spaced closer together.

On the other hand in Fig. 87 there is sufficient plain weave between the individual dots to prevent bunching together of ends and to absorb any slack that may have developed. The longest floats are tied down in the center which makes for greater take-up. These interlacing points will be all but obscured by the adjacent floating ends.

Viewed in the light of experience, Fig. 86 appears to be a problem design or we may call it a border line case. We purposely refrain from calling it a faulty design because we can very well visualize how it could be made under favorable conditions and with a good deal of know-how applied to it provided it is produced on a small scale with the price of no particular importance. For mills catering to the bread and butter trade, to whom bulk production appeals and where price is of a major consideration, it probably will be found best to use Fig. 87 instead. Surely enough, we recognize the fact that Fig. 87 is not an equivalent replacement for Fig. 86, but looking at it from a practical point of view, it approximates the other closely enough to serve the intended purpose.

Those who have experience along this line can verify that such a substitution of design does not matter overly in new fabrics. The consumer accepts one just as well as the other, unless there is a specific reason for wanting it the other way. Mill demand gives support to Fig. 87 or other similar arrangements because these can be manufactured without inherent difficulty and at a lower cost. We have picked Fig. 86 and 87, a seemingly artificial combination from among many other possibilities, to illustrate a crucial point both from a designing and a manufacturing point of view.

Fortunately the consumer generally knows nothing about intricate manufacturing problems and he cares even less. Certainly he does not appreciate it, nor is he willing to pay an extra price to compensate for excess production cost. He is chiefly interested in a pleasing, flawless appearance, good serviceability at a fair price, and these conditions do not follow along the line of tricky problem designs. On the contrary, our experience has always been that the more nursing along through the various processes is required, the greater the possibility for failure.

The American textile industry owes its strength to mass production which excludes problem fabrics. Any condition in the manufacturing of a fabric that requires unusual know-how and meticulous care creates a problem fabric. Such fabrics cost more to produce and in spite of all the nursing along in the various processes by the supervision and operators, the usual result is a high percentage of off-quality cloth. Obviously, such fabrics are impractical for bulk production. Foreign mills with their low labor cost have a considerable advantage in making borderline fabrics, while we have an edge on large volume production. To make mass production a smoothly geared endeavor it is essential to consider the designs not only by their visual appeal, but also in terms of the way in which a particular mill is able to tackle the production problems involved. For this reason the stylist and the designer who originate the patterns always need to be well informed of the manufacturing possibilities and limitations to avoid unforeseen difficulties. Very often, insignificant corrections in the design layout go a long way in helping to improve the quality and the production angle. The above is meant to emphasize that for a fancy mill to function successfully there has to be a coordination between art and technology. Such a coordination gradually leads to the invaluable benefit of concentrating more on qualities the individual mill can produce best and most efficiently in competition with others.

(TO BE CONTINUED)

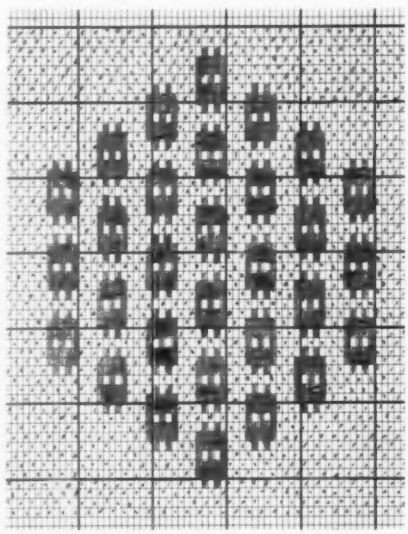


Fig. 87—This design should give no take-up trouble in weaving.

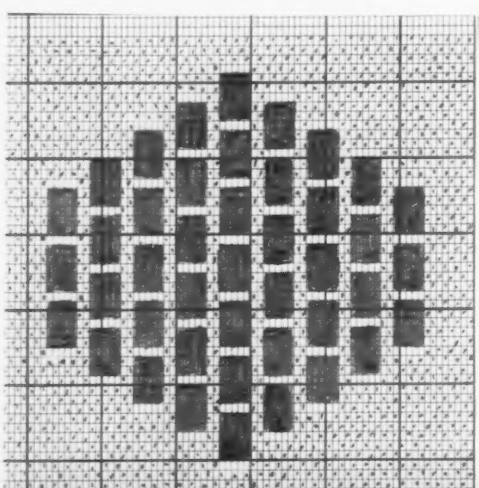


Fig. 86—Problem design

NEW FABRICS

NEW YARNS

Dacron-Flax Prints

A group of new fabrics have been introduced in a crisp, lightweight weave of 65% Dacron polyester fiber and 35% imported flax. The group includes the first prints ever offered in this blend. High-fashion stylings by Pavillon Fabrics, Ltd., New York City have slubbed texture and firm-bodied handle characteristics of flax. Dacron in this new fabric is said to make them easy to wash and quick to dry, with little or no ironing. Offered for resort and spring collections now, and suitable also for summer fashions, the fabrics retain their crisp appearance and hold pleats well.

Stain-Repellent Cottons

A line of no-iron cotton prints, developed in England after extensive research by the Rosendale Rayon Mills London, will be available to American women this fall through the agency of Len Artel, New York City. Known under the trade name of Howcol, the treated fabrics are of two types, both of them shrinkproof. One, requiring no ironing and with a special resin finish, is said to have a soft hand and be virtually impossible to crease. The other, with a crisp polished feel, is said to be waterproof and stainproof.

Coated Nylon Fabric

C. R. Daniels, Inc., now has Dantex neoprene-coated nylon fabric available in 138 and 144-inch widths. These widths permit use of the fabric in a single, seamless piece. They reduce fabrication cost and eliminate possibility of leakage or seepage. Available in a recommended 16-ounce weight, the material is black on one side and aluminum on the other.

Quilted Plastic Material

The Jason Corp. has introduced Crown Grade Sealtult, a stitchless quilted plastic material. The new material is a lightweight, low-cost, high-style plastic said to be suitable for mass market products. The new grade weighs 9 ounces per 54-inch yard, with prices starting at 37 cents a yard depending on construction and quantity. The grade comes in three patterns and 23 colors. It may be sewed, glued, stapled, or tacked and is thus extremely flexible to use.

New Rayon Carpet Fiber

A new specially tufted rayon carpet fiber has been announced by Alintex-Inc. of Boston, as representatives in the United States of Phrix Gesellschaft, m.b.h., Hamburg, Germany. The German company informs Alintex-Inc., that the new rayon carpet fiber has special qualities including anti-soiling characteristics, plus crimp and a wool-like hand and appearance. For further information write the editors.

Dacron-Cotton Summer Suits Gain

Many men's wear manufacturers of lightweight suits and sport coats, and virtually all major slack manufacturers are showing blends of 65% or more Dacron polyester fiber and cotton in their 1957 spring-summer lines. On the basis of strong market interest in these blends a 60% increase in yardage sales of this percentage mixture of Dacron and cotton, from some 3,000,000 yards in 1956 to an estimated 5,000,000 yards or more in 1957, is predicted by Gerard Alexander, tailored outerwear merchandising manager for Du Pont's Textile Fibers Department, producer of Dacron.

(Continued on Page 81)

THE TEXTILE DISTRIBUTORS INSTITUTE, INC.

NEWS AND COMMENT

FTC Rules on Advertising Allowances By Sellers under Robinson-Patman Act

A recent ruling of the Federal Trade Commission sheds light on the question of allowances by sellers for promotional and advertising purposes in relation to the Robinson-Patman Act. The Commission laid down 10 general principles for guidance of sellers. These are only preliminary and may later be changed either by the Federal Trade Commission or by a court if the FTC's ruling is appealed. The 10 principles are:

1. A seller is free to choose whether or not to make advertising or other promotional allowances.
2. If he chooses to make them, he is free to choose the base on which to make payments (such as dollar volume of purchases, unit volume of space, etc.).
3. The base must be measurable and capable of being proportioned to payments.
4. The chosen base must be within reach of all competing customers. For example, a seller cannot limit advertising to media of such wide circulation that only his larger customers can afford to participate in his plan.
5. Base and terms of payments must be definitely and understandably stated to all customers and affirmatively offered to them.
6. He must require from all customers same proof that they have rendered services he contracted and paid for.
7. Payments must be made to all customers in same proportion to base selected.
8. Seller may have more than one plan, but each one must comply with these conditions.
9. In event seller enters into cooperative promotional allowance plan devised and offered by a customer, he adopts this plan as his own. It must be affirmatively offered to all other customers under the conditions outlined here.
10. When different plans are predicated on different products, such products must actually be different from competitive standpoint, not merely distinguishable by reason of size, weight and packaging.

Dinner-Dance Scheduled for Nov. 8

The annual formal dinner-dance of the Textile Distributors Institute will be held on Thursday evening, November 8 at the Plaza Hotel in New York City. Reservations will be limited to 500, and will be filled in the order received. For reservations, telephone the Institute at LOngacre 3-2992.

Tansill Honored by TVA

Donald B. Tansill, president of M. Lowenstein & Sons, Inc. was one of the recipients of the Textile Veterans Association Annual Achievement Awards at the tenth anniversary dinner Sept. 26. Mr. Tansill is known for his charity and for his interest in all affairs for the betterment of local and nationwide conditions.

Outlook *(Continued from Page 30)*

In women's coat and suit markets, once important departments previously but now rundown, there has also been noticed new spark of interest. In coat departments, some credit must be given to synthetic fur fabrics; in suit departments cotton-silk blends, along with improved styling in other suiting fabrics, has led to new interest.

It can be concluded that one of most adverse of effects overproduction has on textile industry is damage it does to creative effort. There has been nothing wrong with consumers in 1956. And, in those individual sections of textile-apparel industry where styling and development functions were successfully executed, there has been nothing wrong with industry either.

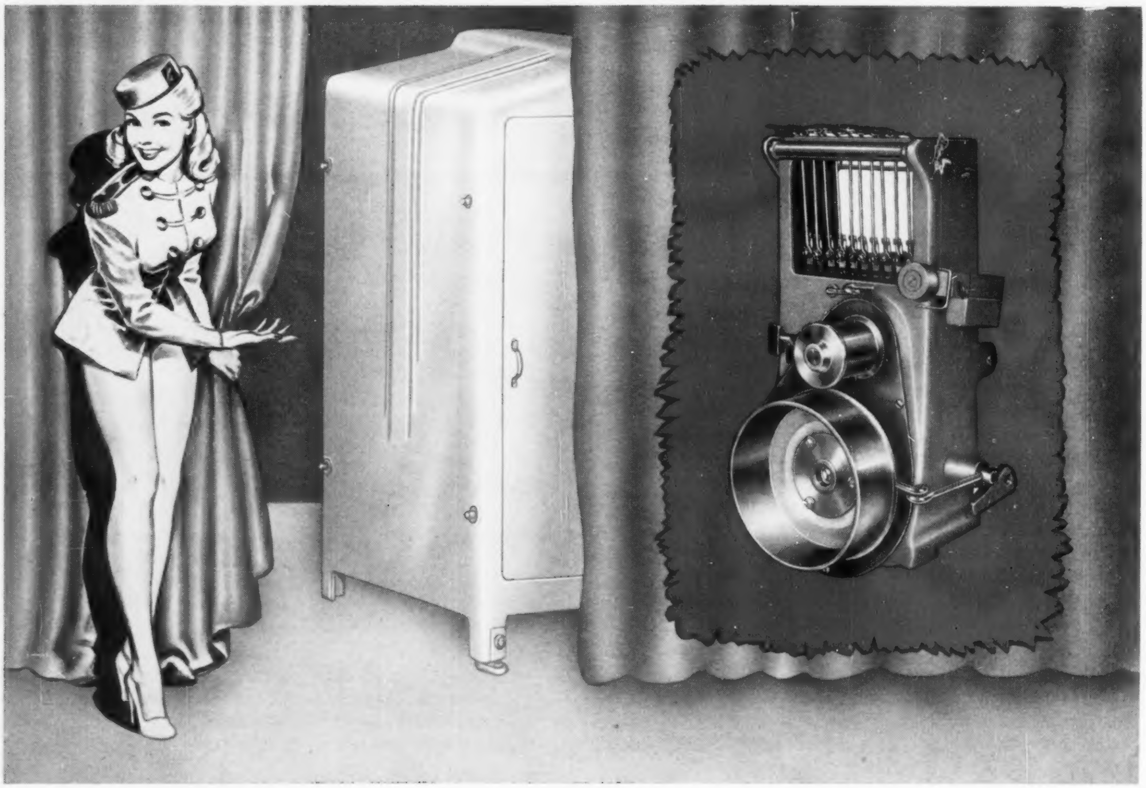
Staples, however, have had bad time, and there is nothing in this year's sales trend to encourage belief that this is temporary situation.

See This Exhibit

An exhibition of American textiles at the Museum of Modern Art, 11 West 53 St., New York City which opened in August will continue through Nov. 4. Among the 185 samples of American-made fabrics on display in a series of dramatic arrangements are a wide range of industrial, apparel and home furnishing cloths. The museum is open daily from noon to six P.M., Sundays from one to seven P.M. Sponsors of the exhibit are 50 firms with Daniel B. Fuller of D. B. Fuller & Co., serving as chairman.

Riverdale Opens New Showrooms

Shown below is one of the display windows in Riverdale's Parade of Fibers presenting Fortisan in a golden sheer and an antique satin weave texture in printed and plain colors. The new showrooms are located at 295 Fifth Ave.



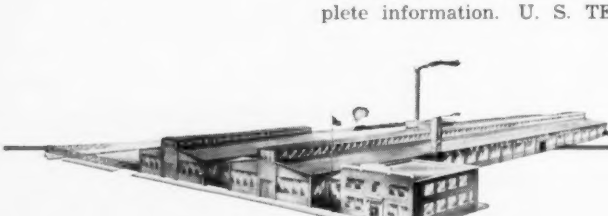
NEW TEN-INCH TRAVERSE DOUBLER-TWISTER HANDLES AS LOW AS HALF-TURN PER INCH YARN AT SPINDLE SPEEDS OF 9,000 RPM

The new U. S. Acme Doubler-Twister brings new economies to primary twist operations! This new machine is capable of handling zero yarns as low as half-turn-per-inch at spindle speeds as high as 9,000 rpm. Full yarn control is achieved with a dual stop motion—above and below the feed rolls.

In the very heart of the machine is a revolutionary yet simplified new mechanical feed roll clutch device. The feed rolls, dual stop motion controls, drop wires and thread guides are combined in one unit. Two bolts hold the entire assembly to the main feed roll rail and no adjustments are necessary. *It's another U. S. Acme first* that enables you to take off the entire unit when necessary without disassembling a multitude of parts.

This new doubler-twister is equipped with a transfer oiling device located directly above the feed roll unit, with proper guards to prevent lint from coming in contact with the oil. The machine will handle any available synthetic yarn packages on its creel and will produce straight, conical, bottle wind and pirn packages.

All these features—plus new, bigger package size; a more efficient and compact unit that minimizes maintenance; high production on low twists . . . add up to higher production, cleaner operation and lower cost! Write, phone or wire for complete information. U. S. TEXTILE MACHINE COMPANY, Scranton 8, Penna.



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NON-WOVEN FABRICS

their status today

Are non-wovens the fabrics of the future? Here are the facts about non-wovens today written by experts on all major aspects of these materials

By Dr. W. W. Watkins

THE EARLIEST known fabrics produced thousands of years ago were non-woven materials produced from bark and other naturally-occurring fibrous materials. As fabrics, they didn't amount to much and so were replaced by stronger, more durable woven fabrics with the discovery of spinning and weaving processes.

This situation prevailed up to the middle 1930's when patents began to appear proclaiming that many of the deficiencies of the earlier non-wovens could be overcome, or at least alleviated, by the use and proper application of certain resinous bonding agents. Commercial operations, making use of these findings, started up at this time, but it was not until the years just after World War II that appreciable growth was realized. Since that time, the consumption of textile fibers in non-wovens has doubled about every three years and reached an estimated level of 60 million lbs. in 1955. All indications are that this growth is continuing.

The bulk of the fibers used thus far in non-wovens has been rayon and cotton because most of the products available to date have appeared best suited for disposable, inexpensive, single use articles. Early efforts to improve the durability of non-wovens through the use of hydrophobic man-made fibers soon disclosed that the binders then in use did not permit taking full advantage of the unique properties of these fibers.

This situation has been under steady attack for the last several years by numerous resin producers and non-woven manufacturers. As a result, successful, commercial non-woven fabrics using major portions of man-made fibers have appeared on the market recently for such diverse end uses as skirtings, filters, and backings for vinyl coated upholstery fabrics. This has come about not because of the glamour associated with any particular fiber but because the fabrics themselves offered real functional and aesthetic values at a commensurate price.

There has been a certain amount of loose talk going around that non-woven fabrics will eventually make conventional weaving obsolete. I don't believe this, nor do I know of any responsible producer of non-woven fabrics who subscribes to this theory. What we do believe is that non-wovens offer a new degree of freedom in the production of textile materials which will permit them to capture a very substantial market, particularly if certain improvements in properties can be achieved. In their present state of development, they offer new textural possibilities because of their isotropic nature—in other words, their absence of definite warp and filling directions. In addition, when containing a major proportion of thermoplastic fibers, they can be permanently embossed to a variety of interesting surface effects.

It is already possible to produce non-wovens which weight-for-weight have substantially higher tear strength than do woven fabrics from the same fiber.

(Continued on Page 67)

Dr. W. W. Watkins

Dr. Watkins is group manager, industrial merchandising section, textile fibers department of the Du Pont Co. After taking a Ph.D. degree in organic chemistry at Harvard, he joined Du Pont in 1936 as a research chemist. Since that time he has worked in many aspects of textile research for the company and became manager of industrial sales in 1954, advancing to his present post in 1955.

Papers presented at Sept. 12 meeting American Association for Textile Technology, Inc.

Non-Woven Fabrics

New bonding techniques

By Dr. R. P. Moffett

IN THIS REPORT are presented some of the results obtained by Du Pont in one research program on non-woven fabrics for apparel and household end uses. This program is aimed at obtaining a better understanding of the principles required to prepare non-woven fabrics with improved aesthetics and performance. Our discussion will deal with a phase of the research involving use of low-melting (up to 400°F.) fibers to bond higher-melting "base" (or "primary") fibers. We are aware of other widely-used methods of bonding non-woven structures, but the binder fiber method was found particularly useful for the development of basic information we desired. One of the earliest patents in this field is the Reed patent (U.S. 2,277,049) assigned to the Kendall Co.

The research program included studies on chemical similarity between base fibers and binder fibers; the mechanism of bonding with low-melting fibers; the proportion of base to binder fibers required for aesthetically appealing fabrics; the effects of base fiber length and denier; and the effects of binder fiber length and denier.

This work was carried out principally with nylon and Dacron polyester base fibers. Bonding was accomplished with various commercially available fibers, and with experimental binder fibers which are not commercially available. Most of the work was done with the experimental binder fibers, for reasons soon to be discussed. All work was done on a laboratory scale.

Dr. R. P. Moffett

Dr. Moffett is a research chemist in Du Pont's textile fibers department. Following graduation from Duke University in 1950 with a degree in physical chemistry, he first worked in the Acetate and Orlon research division. He was transferred to his present assignment in 1954.

First, let us consider procedures used for sample preparation and testing. Low-melting binder fibers were stock-blended with base fibers, and webs were prepared on a sample card. One portion of such a web was laid on top of another, the fibers of the first being oriented perpendicularly to those of the second. This double-layered web (weighing approximately 3 ounces per square yard) was then bonded by application of heat and pressure in a hydraulic press. Bonding temperatures ranged from 300 to 400°F., depending on the melting temperature of the binder fiber. The bonding pressure was generally 50 psi, and the period of bonding was usually one minute. Fabrics prepared in this fashion were tested for strength and flexibility, as indicated in Figure 1. Subjective ratings of durability, softness, and resilience were obtained in many cases.

PHYSICAL TESTS

Strength: Scott 1" cut strip tensile
Trapezoid tear
Mullen burst

Flexibility: Length of fabric strip bending 41.5° under its own weight

Durability: 1 hour continuous wet tumbling

Softness: Subjective rating

Resilience: Subjective rating

Figure 1

Let us now look at the experimental results. The first observation will be directed at the chemical similarity of base fiber/binder fiber combinations. In this study, nylon and Dacron were bonded with several commercial and experimental binder fibers. The experimental binder fibers were designed especially for use with nylon and Dacron—one was a polyamide and the other a polyester. The best combinations of strength and flexibility were obtained from structures in which the base fibers and the binder fibers were chemically similar.

Chemical similarity apparently fostered strong adhesive forces between base and binder fibers. Results of experiments in which nylon was bonded with various low-melting fibers are presented in Figure 2.

NYLON BONDED WITH LOW-MELTING FIBERS

Binder Fiber	*Bonding Temp., °F.*	*Strength*	*Stiffness*
Experimental polyamide	325-375	High	Low
Experimental polyester	400	Low	Low
6 Nylon	400	Mod.	Mod.
Undrawn polyethylene terephthalate	400	Low	Low
Polyvinyl chloride	400	High	High
Polyvinyl chloride/ Polyvinyl acetate	325	Mod.	High
Polyacrylonitrile/ Polyvinyl chloride	400	High	High
Polyvinylidene chloride/ Polyvinyl chloride	375	High	Mod.

Figure 2

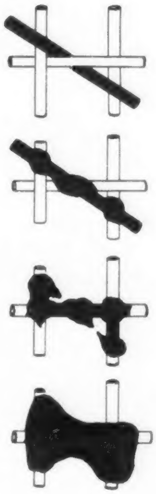
Bonding temperatures were raised until one of three things happened: either a strong structure was obtained; the fabric stiffness reached an unacceptable level (without development of adequate strength); or 400°F. was reached and the fabric was still weak. The information tabulated in the Figure shows that fabrics of nylon bonded with experimental polyamide binder fibers were both strong and flexible. Tensile strengths for 3 ounce per square yard fabrics were between 10 and 15 pounds, while bending lengths were between 5.5 and 6.5 centimeters.

In similar experiments, where Dacron polyester base fibers were bonded with various binder fibers, the best combinations of strength and flexibility were obtained with the experimental polyester binder fibers at about 350°F. Undrawn polyethylene terephthalate also bonded Dacron structures, but higher bonding temperatures were required. These structures were slightly stiffer than nylon fabrics, having bending lengths of 7-8 cm. at comparable strength levels. The greater stiffness was presumably caused by the higher fiber modulus of Dacron. Improved resilience and durability were obtained through use of the Dacron base fibers. Blends of nylon and Dacron base fibers bonded with experimental polyamide binder fibers gave fabrics which combined the good properties of each of the two unblended fabrics: softness was obtained from the nylon, while resilience and durability were obtained from the Dacron.

Let us now consider the mechanism of bonding. A web containing 90% nylon and 10% dyed polyamide binder fiber was prepared. Portions of the web were bonded at various temperatures. Schematic representations of microscopic observations of fabrics bonded at temperatures ranging from 250 to 400°F. are shown in Figure 3. The sketches and the data show that some bonding occurred at fiber cross-over points when the binder fibers were only softened (at 300°F.); but for the development of adequate fabric strength, it was necesary for the binder fibers to be completely melted (at 350°F.).

When the fibers were melted, molten polymer flowed along the base fibers to cross-over points,

NYLON BONDED WITH EXPERIMENTAL POLYAMIDE



BONDING TEMP, °F	TENSILE STRENGTH, #	BENDING LENGTH, CM
250	0	2.9
300	0.5	4.9
325	6.6	5.8
350	9.0	5.5
400	14.0	6.8

Fig. 3

where bonds were formed. At a temperature in excess of that required for fiber melting, molten polymer flowed freely through interstices, forming relatively large areas of polymer throughout the matrix of the base fibers. This condition increased fabric strength, but also increased stiffness to an undesirable level for apparel uses.

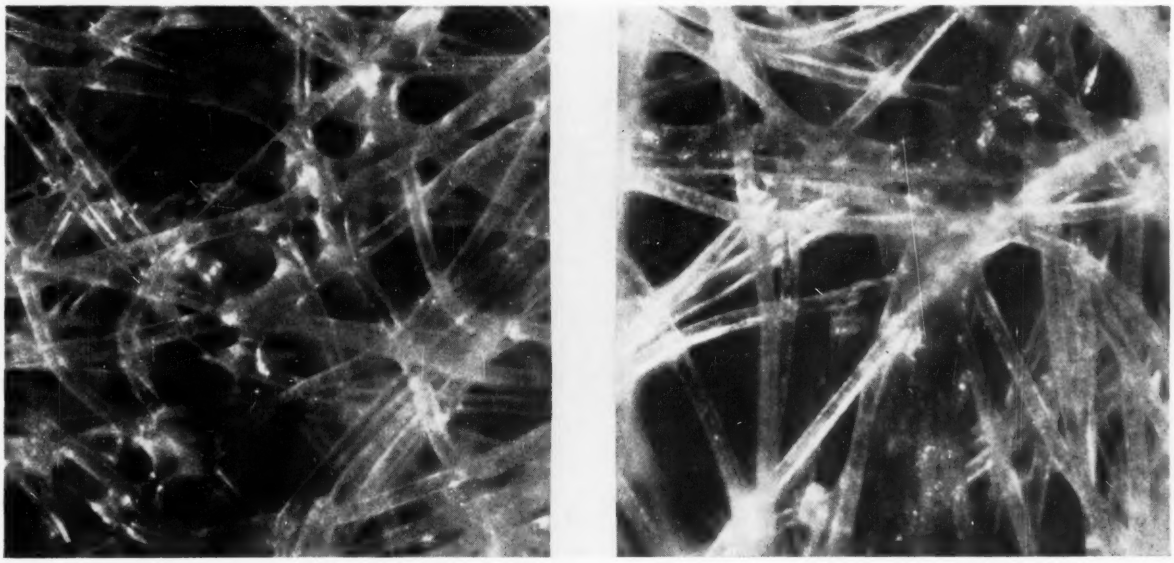
Recently, a different mode of bonding was observed for Dacron polyester base fibers bonded with experimental polyester binder fibers. Here the binder polymer did not flow freely along the base fibers. Photomicrographs showing both types of bonding are reproduced in Figure 4. The effect of this difference in mode of bonding on fabric properties is being investigated.

Let us next look at the effect which the proportion of the low-melting fiber in the structure had on the

Fig. 4—PHOTOMICROGRAPHS OF BONDED AREAS

Nylon/Polyamide Binder Fiber

Dacron/Polyester Binder Fiber



EFFECT OF PROPORTION OF NYLON BASE FIBER / POLYAMIDE BINDER FIBER

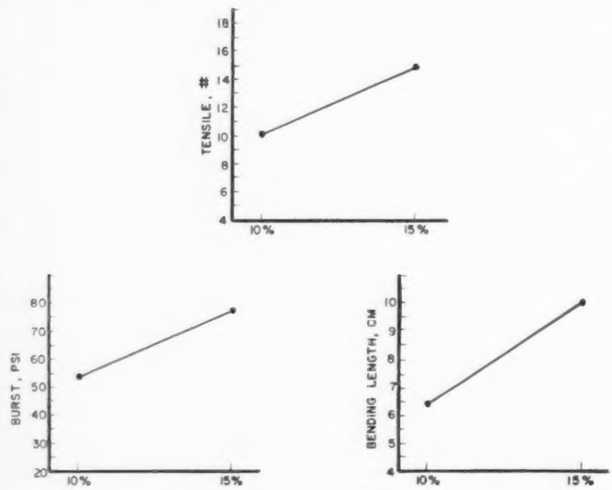


Fig. 5

properties of nylon fabrics. Figure 5 shows us what happened in the 10 to 15% polyamide binder fiber range—the useful range for apparel and household end uses. The data indicate that in this range good combinations of strength and bending length were obtained. Structures containing 5% binder fibers were very weak (though soft and flexible), while those containing 20% binder fibers were very strong but unacceptably stiff. In most of our subsequent work, we used 10% of the binder fiber. However, it is important to note that outside of the 10 to 15% binder fiber range, fabrics were produced which might have desirable properties for other end uses—such as interliners, surgical pads, rug backings, and backings for vinyl coating.

Let us now consider the effect of some base and binder fiber geometric variations on fabric properties. One variation is the base fiber length. Very short (½") nylon base fibers were compared with those of longer length (1½"). Polyamide binder fibers were 1⅛" long, and all fibers were 3 denier per filament.

Webs for this experiment were prepared on a Rando-Webber, since our carding equipment would not effectively handle the half-inch fibers. The data in Figure 6 show that the longer base fibers gave greater strength, while the half-inch fibers offered slightly improved flexibility. The major contribution of the short fibers was indicated by subjective evaluations. These showed that fabrics containing the half-inch fibers were considerably softer, and that the fuzz they developed during tumble finishing was shorter and more acceptable in appearance.

By combining short length and long length base fibers, combinations of softness (from the former) and strength (from the latter) were obtained. Data are presented in Figure 7 to show a comparison between a nylon fabric containing equal quantities of ½" and 2" base fibers, and a fabric containing all 1⅛" base fibers. In both cases, bonding was accomplished with 1⅛" polyamide binder fibers. The data show that when long and short base fibers were blended, improved tensile and tear strengths were obtained. Although bending length increased slightly, fabric softness was improved. A more attractive surface was retained by this fabric during tumble finishing. Despite the reduction in burst strength, the combination of short and long staple lengths was considered advantageous because fabrics with better aesthetics and performance were produced.

PROPERTIES OBTAINED BY BLENDING NYLON BASE FIBERS OF DIFFERENT LENGTHS

	1⅛"	½" + 2"
Tensile Strength, #	8.4	12
Tear Strength, #	8.0	11
Burst Strength, psi	66	45
Bending Length, cm.	5.1	5.6
Durability		Improved
Softness		Improved

Figure 7

The next part of the investigation was aimed at determining the effect of base fiber denier on fabric properties. For this work, fabrics containing 1.5 denier nylon base fibers were compared with fabrics composed of 3 denier base fibers. The polyamide binder fibers were 3 denier per filament in both cases. The data of Figure 8 indicate a substantial increase in tensile strength and a significant reduction in bending length due to use of the 1.5-denier fibers. In addition, a pronounced improvement in softness was detected subjectively. The conclusion drawn from this experiment was that light denier base fibers gave stronger, softer and more flexible fabrics.

Now let us turn our attention to the effect of binder fiber geometric variations on fabric proper-

Fig. 6

EFFECT OF NYLON BASE FIBER LENGTH

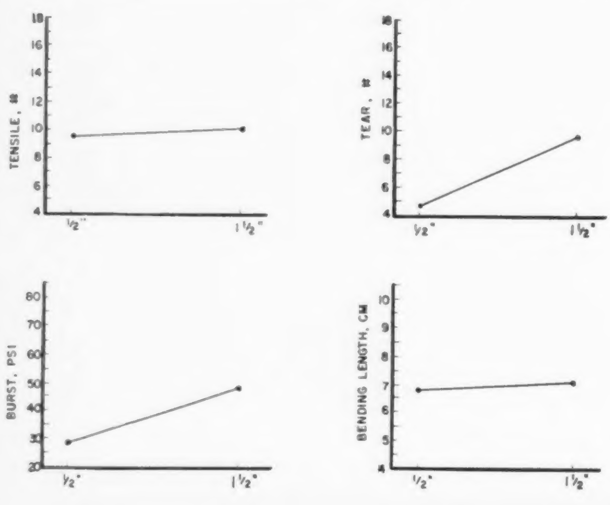
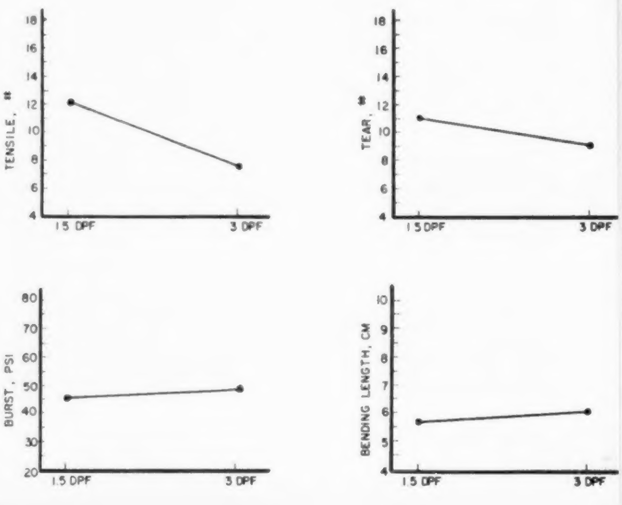


Fig. 8

EFFECT OF NYLON BASE FIBER DENIER



ties. We shall look first at binder fiber length. Webs containing 3 denier, 1½" nylon base fibers were bonded with 3 denier experimental polyamide binder fibers, of various lengths. Similarly, webs containing Dacron polyester base fibers were bonded with experimental polyester binder fibers of different lengths. No difference in fabric properties was observed, regardless of whether ¼, ½, 1, 2 or 3 inch binder fibers were used. It was concluded that the total amount of binder fiber was the contributing factor in determining fabric properties; fiber lengths were unimportant.

Our last consideration is the effect of binder fiber denier on fabric properties. In the nylon/polyamide binder fiber system, no difference in fabric properties was found, regardless of whether 1.5 or 3 denier binder fibers were used. In the Dacron polyester binder fiber system, however, an increase in fabric strength and stiffness was obtained when 7.5 denier binder fibers were used instead of 3 denier. Data are presented in Figure 9. Work is in progress to explain this difference in the effect of binder fiber denier on fabric properties.

EFFECT OF BINDER FIBER DENIER

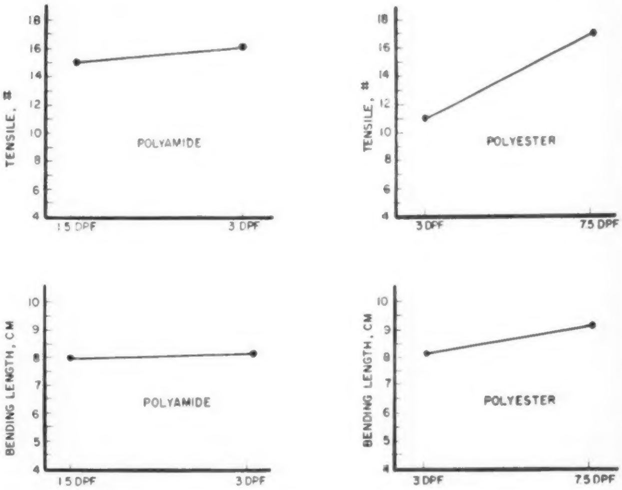


Fig. 9

This brings us to the end of our report on bonding non-woven fabrics with low-melting binder fibers. The data have covered variations held within ranges useful for apparel and household end uses. We have seen that optimum combinations of strength and softness were obtained when base fibers and binder fibers were chemically similar. We have also seen that short base fibers were desirable for aesthetics, but long fibers were necessary for strength. By combining short and long lengths, attractive combinations of softness and strength were obtained. Light denier base fibers were found desirable from the standpoint of both strength and softness. Binder fiber length was found to have no influence on fabric characteristics. The effect of binder fiber denier has yet to be established.

There are many questions still to be answered. It is our hope that investigation of principles, such as those discussed this evening, will lead to production of non-woven fabrics with improved aesthetics and performance.

Non-Woven Fabrics

Processes, Problems, Predictions

By D. V. Probasco

To PRESENT a fairly complete picture of the non-woven fabric industry, an outline of the various means of manufacturing non-woven fabrics, as they are employed today, is first in order.

It is necessary to prepare the raw stock in the usual textile fashion consisting of proper opening, blending, etc., to provide a stock that can be suitably carded and handled. After this has been done, there are several means of forming a suitable web or webs prior to bonding into non-woven fabrics.

The first and simplest method is that of arranging cards in a series, so that the web coming from the back card passes underneath those in front of it and the subsequent webs are layed on top as the composite web moves forward.

The second method is that of cross-lapping whereby suitable weights are built up by layering the web from one or more cards or garnetts back and forth on a moving conveyor. In the tandem card systems, all fibers are predominantly lengthwise in the finished web. In the second lapping method, the fibers are predominantly crosswise in the finished web.

D. V. Probasco

Mr. Probasco has been in charge of the Lantuck Sales Department at Wellington Sears Co. since 1949. A graduate of Texas Technical College, he has specialized in textile engineering. His early experience was gained in cotton mills in the South. Later he worked for the Du Pont Co. and American Viscose Corp. He became a sales engineer for Wellington Sears in 1947.

A third method of forming a suitable web is a combination of the first two. In this system, one or two are carded straight away on to a conveyor and then one or more webs are cross-layed on top of them with extreme care taken to match the edges of the web being cross-layed. Along with this, if desired, a second length-wise layer is sometimes deposited on top of those just mentioned. By building up a web of this sort, essentially equal strength in length-wise and cross-wise directions is obtained. The chief disadvantage is that it is impossible to make extremely light-weight combinations since at least three and preferably four layers are required.

The fourth means of making a web is that of air deposition and, of course, this provides an essentially random web structure.

End Use to Decide Type of Web

In many instances it is desirable to choose the type of web according to the end use involved. For instance, in the first method with predominating length-wise strength, applications requiring strength of this fashion such as tapes, sanitary napkin covers, etc., are most suited.

When cross-lapping is used, a relatively poor quality web results. However, this tends to decrease as the weight increases. Cross-lapping is a good method of making extremely heavy webs where uniform strength and gauge are not a factor.

The third method where essentially uniform strength is required and relatively heavy weights, is an excellent means of obtaining such a web.

The air deposited web is perhaps the most versatile in weight variation since it is possible to go from as low as one-half ounce per square yard up to sometimes as much as 20 ounces per square yard, all the while maintaining a random formation.

Therefore, it becomes obvious that no one system of web formation is the answer to all non-woven fabrics. This is not surprising in view of the fact that many types of looms and knitting machines are in operation manufacturing a wide variety of fabrics in those fields.

Next comes the method of bonding which is like the web-forming techniques in that there are a number being successfully employed for a variety of end uses. Any of the above webs could successfully be bonded by the following means:

By using thermo-plastic fibers which are carefully blended into the web at the time of its formation. Bonding is subsequently achieved by proper heat and some pressure applied to the dry web. This is one of the simplest means of bonding but one which is limited to thin webs and one which invariably produces a paper-like structure. A great deal of work is being done in this field in an attempt to develop a suitable means of utilizing a relatively simple process. Unfortunately, the thermo-plastic fibers are rather expensive which tends to offset the saving of the simpler bonding procedure.

A second method is that of print bonding whereby a liquid adhesive agent is printed on to the web in an intermittent pattern. By varying the pattern and the material printed on the web, it is possible to obtain a rather wide variation in hand and usually a comparatively soft hand. For many applications, of course, this soft hand is most desirable even though some other features such as durability may be somewhat lacking.

A third and perhaps most common method of bonding is that of web saturation in a liquid adhesive. This is done by two methods—the most common one is by saturation of the dry web between horizontal rollers set side by side so that the web passes down between them. The bonding agent is applied to the web as it goes into the nip of the rolls. This is a relatively simple method requiring fairly accurate metering of the bonding agent but at the same time removing the excess binder so that the web emerging from the bottom of the rolls is ready for drying. The other saturation method is by completely immersing the web into a bath of binder which usually calls for a conveyor system of some kind which will carry the web through the bath without distorting it. After immersion, of course, it is necessary to remove the excess binder usually by squeezing the web between conveyor screens and then passing the web into the drying chamber.

Methods used for drying saturated or bonded webs are more or less conventional. Both hot air dryers and steam heated cans are employed successfully. Infra-red drying has been employed but it is expensive and does not offer any particular advantage. Many of the binders employed today require careful temperature control for satisfactory drying particularly on heavy webs. Where the bonding agent is to be cured, again temperature control is very critical. Curing is normally done in a secondary stage to simplify drying problems.

The finishing of the non-woven fabrics is just beginning to be a major factor. Finishing may consist of resaturation and perhaps curing. Dyeing and printing are becoming more and more important and are in themselves a major finishing operation. Much is to be learned about finishing of non-woven fabrics. Up to the present, producers of non-woven fabrics have in the main supplied what might be termed a grey fabric. A good bit of work has been done and is being done on finishing techniques. But in view of the unusual properties of most non-woven fabrics, conventional finishing methods are seldom applicable. In all probability, finishing techniques will be developed over the coming months and years to apply to non-woven structures on a very specialized basis. In other words, proper utilization of non-woven structures depends to a large degree on proper finishing methods yet to be developed.

Problems Confronting Producers

The second phase of the industry deals with some of the problems confronting non-woven producers and consumers today.

In the first place, the technical problems involved are tremendous. A whole line of new products are in the process of being developed. Each application frequently calls for a special product. Along with this, to make matters even more costly and complicated, is the absolute necessity for developing new processes for doing the job. In other words, a whole new industry is being built. This, of course, is extremely expensive in the form of high development costs to be applied to the new products and processes.

A second problem confronting non-woven producers is the relatively small market that each is able to exploit at the present time. Of course, those involved have their sights set on markets which have great potentials but this requires a good bit of time and tremendous effort to develop the markets to the point where they can support the cost of

development that has gone into the program. In other words, the selling expense is relatively quite high in non-woven fabrics as compared to conventional textiles. Therefore, a producer and merchandiser of non-woven fabrics is confronted with a distorted overhead cost in the present stage of the industry.

The third problem is the matter of customer and consumer education. Each field or market that is explored requires an individual selling and educational campaign. Customers must be taught the merits of non-woven products. They have to be educated to the fact that non-woven are not cheap, that they are not paper, and are not comparable to paper in price. Furthermore, the non-woven industry is not based on very cheap raw materials. Many have the mistaken idea that non-woven fabrics can be made from most any waste by-products from conventional textile operations. This is certainly not true for the industry. By far more virgin staple is being used and will continue to be consumed in non-woven textiles than waste products. This educational program of course, results in a relatively high promotion and advertising expense.

The fourth problem deals with a subject already mentioned; namely, that of proper finishing techniques. This field is comparatively wide open with important and large strides needed at once.

What of the Future for Non-Wovens?

Now comes the final phase, namely predictions for the future of non-woven fabrics. Non-woven structures are the oldest form of textile materials. This may come as a surprise to many until some of the finest materials, leather and furs are considered. In the clothing and apparel field, these two items have no peer as fine articles of clothing. Leather, of course, has many varied uses and is often imitated in both automotive and furniture upholstery, also luggage and travel cases. Shoes are a tremendous consumer of leather and a field which in itself is staggering in volume.

Leather, of course, is used in wallets, belts, handbags and many other places. Leather has many industrial uses too numerous to mention. Due to its unusual structure, it can be manipulated into many shapes and forms and is relatively impervious to many common liquids such as waters and oils. Leather is a non-woven structure in its truest form and can be put into any desired color, can be made soft or stiff, it is water tight yet it breathes. It can be thick or thin as desired. It is expensive and luxurious and requires many laborious finishing operations.

Felt from fibers of the wool and fur family, often in combination with others, is also one of the oldest forms of textiles. Here again it has many varied applications and also has the ability to be made soft or stiff, thick or thin and to be dyed into many colors. The use of felt as a clothing material is, of course, limited due to its inability to be washed and due to the fact that it is relatively expensive. Felt has many decorative and industrial uses.

What can today's non-woven structures do to compete with the above? In the apparel field, non-woven fabrics are successfully being used as interfacings, and as felt replacement materials in shoulder pads, belts, etc. They have been explored as outerwear and much is yet to come in this field. Non-woven structures are used quite successfully in many places in the manufacture of shoes. Non-woven fabrics are not properly classified as disposable items except in special cases where woven or knitted structures are also disposable as in the surgical gauze and bandage field. Non-woven structures are basically permanent useful textile materials which do a specialized job sometimes in place of other less suitable materials and sometimes in conjunction with them.

In the industrial field, non-woven structures are used in plastics as reinforcing members both in high and low pressure laminating. They are coated with conventional materials to be used in the same fashion as leather for upholstery, handbags, luggage, shoes, etc. Non-woven structures are satisfactorily being used in place of and similar to felt. In many instances, a non-woven structure is preferred to felt because of its dimensional stability in the presence of moisture. There are many specialized applications for non-woven materials which are not yet of sufficient volume each to be mentioned yet the aggregate is worthwhile and growing.

Now as to the future of non-woven structures. There is much development work to be done both in the fiber manipulation of the web formation and in bonding techniques, new bonding materials, etc. Finishing must be developed and no doubt will be forthcoming. There must be continued consumer education in the form of advertising and promotion as well as customer education as to the merits of the materials themselves. Proper styling of end products is of course a must. If the end use is apparel, either outerwear or interfacing, attractive patterns must be provided. Perhaps the most important phase of styling is that of avoiding misapplications. Non-woven structures when properly used do a more than satisfactory job. However, they are far from the answer to every probelm and must not be construed as such.

It would seem that any one interested in the non-woven industry could draw his own conclusions based on:

1) The industry's consumption of 40 to 65 million pounds of fibers in 1955. These figures have been based on estimates made by several people who have conducted inquiries in recent months.

2) The consideration of the tremendous effort that is being applied to the industry today as compared to the relatively small effort that was being applied only 5-10 years ago.

Non-Woven Fabrics

(Continued from Page 61)

Tensile strengths, however, are appreciably lower. This is a place where further improvement is needed. Nevertheless, the present combination of properties is showing considerable promise in several industrial applications.

On the other hand, when apparel applications are considered, I think everyone will admit that the existing commercially available non-wovens tend to be "papery" in nature although considerable improvement has been made along these lines in recent years and commercial skirtings have enjoyed considerable popularity. I think it is fair to say, though, that the production of a non-woven fabric of satisfactory durability possessing the hand and drape of a woven fabric is a goal which has not yet been achieved commercially. The following papers will give some indication as to what progress is being made in solving these and other problems associated with the production of non-woven fabrics.

Non-Woven Fabrics

The machines that make them

By Harmon B. Riehl

FABRICS of the non-woven type are quite old in the textile industry. In past years they were produced as wool felts, glazed wadding and needle-punched batts of several kinds. Machines for all of these products were designed and built to produce a mat of thoroughly opened fibers, even in thickness and uniform in fiber distribution.

The great interest in new non-woven fabrics and the increase in their markets have been due, principally, to introduction of the newer synthetic fibers and newer types of bonding materials that have become available in the past ten years. These new fibers and bonding agents have made possible a lighter-weight mat in which the fiber arrangement can be made to suit the characteristics of the product required, such as hand, drape and finish. The fabric can have even strength in every direction, or with the greater strength lengthwise. The thickness of the material can be anything that is needed, from a thin sheet, only a few fibers thick, to a batt that can be built up to an inch or more in thickness.

All of these variables are controllable through several factors—the type of fiber to be used, the length of fiber, or blends of several types—you can have variations in the machinery used to lay up the web before binding. You can vary the type of binder or bonding agent used, and the method and apparatus for drying and finishing the products.

In the older non-woven products, like wool felts and glazed wadding, carded webs were used, either in cross-laid arrangement or straight out from the doffers of the cards, in single or multiple layers. For some non-woven products, these methods and machines are still used, and will continue to be used because they produce certain definite characteristics required in some end products. Many other non-woven products, on the other hand, require an unoriented arrangement of the fiber. This can be obtained very readily by any one of the several means used to remove the stock from the card, garnett, Rando-Webber or other machines used to separate the fibers before the web is formed.

Harmon B. Riehl

Mr. Riehl is vice president in charge of sales of Proctor & Schwartz, Inc. He has been with the company for over 40 years having spent his earlier years of service in shop work and the purchasing and engineering departments. In 1943 he became head of the textile machinery engineering department and in 1949 vice president in full charge of the textile machinery division of the company. Currently he is in charge of sales of both textile and drying equipment.

Whichever final arrangement is used, it is important that the proper preparation of the fiber be made before making a bonded web. This preparation is of vital importance for obtaining uniformity of the final product, as this uniformity is impossible unless all of the fiber bundles are well separated into the individual fibers. The proper preparation usually requires pre-carding or garnetting, unless such opening arrangement is built into the web-forming apparatus.

In recent years, garnett machines and metallic-clothed cards have been found best for these purposes. The best results are obtained when a double process of carding or garnetting is used, so that an even feed is assured across the face of the secondary or finishing machine. No web-forming apparatus for carded webs or air laid webs can deliver the fiber more evenly than was the material fed to it.

Another reason for double carding, aside from the required evenness, is the ability to get more complete opening and a better distribution of the fibers within the mix, especially when waste materials are used as part of the blend.

To follow the normal order of procedure in arriving at the machinery requirements, let us start with the raw materials. New staple fibers of many kinds are now going into non-wovens. These include rayon, acetate, nylon, Orlon and Dacron, as well as vinyon, Dynel, saran, Acrilan and other synthetics. Cotton is used in great quantities, also wool, jute, fiberglass and asbestos. A whole array of textile waste materials are being used, either by themselves or blended with new fibers, to achieve the price range required and to obtain the quantities desired in the final product.

The machinery required to prepare these various fibers and waste materials, suitable for web formation, must be chosen with a view of opening any fine denier synthetics without undue fracture of the staple length, as well as the prevention of nep formation that would mar the finish of the final product. Re-processing pickers, shredder and garnett machines of various types are used on most of these waste materials, and blending units are necessary in the proper making of mixes required for the wide range of products involved.

When fiber length is a factor in determining the characteristics of the final non-woven product, it is also important that equipment be chosen which will blend effectively the long and the short fibers together uniformly.

The garnett machine may also be used as a lap-

making unit, to produce laps that may be fed to cotton cards, Rando-Webbers, or any other machine which may be doing the final web-making. However, the trend today is away from lap-fed web-making toward a continuous line of carding units, in which the preliminary garnett is connected, through an intermediate feed, to the finishing web-laying unit. Recently designed plants have set the various machines in line in the interest of uniformity and for reducing the required labor, through automatic transfer between units.

By these means you get an automatic transfer of materials, but of more importance is the laying on the feed table of the final card, garnett or other machine, an even mass of stock across the face of the feed rolls. This even feeding insures a uniform discharge across the full width of the finishing unit. Also, by this method, the finishing unit may be any width required, up to 100" or more, which cannot be duplicated any other way.

The delivery side of the final machine may produce webs to be cross-laid, as has been done for many years in wool felts or certain other types of fabrics. This makes an excellent continuous operation. For others, webs may be carried straight out from the doffers.

Where an unoriented lay is preferred, several other types of discharge apparatus are available for the delivery side of the final machine. The function of any of these is to take the well-carded fibers from the machine and deliver them, by means of one of several air-transfer devices, against a screen, apron or perforated drum, on which the web of fibers is built up in an even, continuous sheet, provided, of course, that an even layer of stock went into the finishing unit. The sheet, or web, of fibers so delivered is stripped off the screen, apron or drum and is then conveyed directly to the apparatus used in applying the binder or bonding agent.

As may be well understood, recent years have made available to makers of non-wovens a wide range of resinous and other chemical binders, latex and other bonding agents, as well as starches, adhesives, etc. These are being applied by means of sprays, dip tanks, padders, print rolls and the like.

With such wet-bonding processes, there must follow a drying operation, to remove the water or solvent, using either a circulating air system or carrying the web right onto the surface of a series of heated revolving drums. The type of finish that is required will determine the most suitable type of drying machinery to be used.

For some non-wovens, thermoplastic fibers are used as a binder. These thermoplastic fibers are blended with the regular fibers, or may be placed on the face of the web to make a surface coating. The web from the final web-forming unit is then carried directly to heated rolls or other heat and pressure devices. On cooling, as it emerges from these units, the sheets are finished, ready to be rolled up.

Still other products, usually thicker than those mentioned above, are used for insulation and for pads, for cushioning or for packaging materials. Here, too, the fibers are processed as above mentioned, but are bonded together with a powdered resinous binder blown in, or sprayed on, the batt before entering the oven. The oven raises the temperature of the batt to the melting or curing point of the binding agent. Upon cooling, the mass or batt becomes bonded together with the qualities required for insulating materials, cushioning or packaging materials of various types.

When bonded with latex or other rubber materials, a curing or vulcanizing apparatus may be needed to follow the initial drying of the moisture from the pad.

Undoubtedly, there will be many new products put forward which will require other variations in the equipment needed for their production. This will necessitate the most careful consideration of the equipment most suitable to prepare, form and finish these non-woven fabrics of the future.

Anti-Static

(Continued from Page 50)

Perhaps the main problem in the search for the "ideal" anti-static agent has been the lack of satisfactory laboratory testing equipment for evaluating the static properties of the treated textiles.

There are two basic types of measuring instruments in use today for determining the effect of anti-static agents on textiles. One basic type measures the charge generated by friction on the treated textile, and the other basic type measures the conductivity or charge leak-off rate of the textile. In many cases the machines are devised to make both kinds of measurements, and in some cases the measurement made is a combination of the two. So far it has not been possible to relate either type of measurement completely to the actual static effects found in practice.

In conclusion, we may say that, although there has been only partial success in solving the static problem with the new synthetic fibers, there is expectation of complete success within the future. The manufacturers of the synthetic fibers are studying the fundamental properties of these fibers as related to the development of static electricity.

Some of the national technical societies have committees at work on the problem. The manufacturers of finished textiles are carrying on extensive research projects. New instruments for evaluation are being studied and seem to show considerable promise. New ideas and new principles are being developed rapidly. This activity must lead to a complete solution and a cure for the "headache" of static electricity in the new textiles.

Japan *(Continued from Page 44)*

Government's official cocoon crop estimates confirm earlier indications that, despite spring frost damage, increased summer and autumn cocoon crops will bring year's total supply about even with 1955.

Notes: Production of rayon pulp was 170,000 metric tons in first half of this year, compared with 129,000 in 1955. . . . . . Production of dyestuffs was 11,000 tons, compared with 9,700 tons. . . . . . Activity of dyeing and finishing industry continued at high level. Yardage of filament and spun rayon and acetate fabrics handled by industry was up 20% in first half. Newer synthetics were up 60%. ■

Lowenstein

(Continued from Page 32)

a dividend. It is Leon Lowenstein's aim to maintain his company's common stock as "secure as gilt-edged bonds."

Leon Lowenstein has always interested himself in civic matters. He emphasizes that in politics he is not a "party man", but has always voted for what he felt was in the best interests of the country. He is also one of New York's best-known fire-chasers, and he says that this interest of many years' standing may have some bearing on his being today an honorary fire chief. His civic activities extend beyond the reaches of New York City, and in educational matters, he was recently given an honorary degree by Clemson College of Clemson, S. C. In the early part of this year he was given the key to Wilmington, N. C., where his company recently acquired a gray goods mill.

The wealth that has accrued to the Lowenstein family since its company was founded 73 years ago, with capital of $2,500, has not been hoarded by it. The Lowensteins, father and two brothers, have been famous for their generous gifts to worthy causes for as long as they have been in business. In a generous family, Leon Lowenstein has been especially noteworthy in his deep feeling that great wealth creates great obligations. To help him discharge these obligations, he created, in 1941, The Leon Lowenstein Foundation. The purpose of the foundation, it is simply stated in its charter, is "to benefit mankind", and as Mr. Lowenstein expresses it, "particularly the underprivileged".

The Leon Lowenstein Foundation distributes its gifts widely. It would be impossible to list here even a few of the causes and institutions the Foundation has helped. But the creation of the Leon Lowenstein Foundation has not satisfied Leon's strong urge to share his money with others.

Outside the work of the Foundation, he personally gives money and supports with his active participation many other charities. Among these are Hillside Hospital in Queens, New York, an outstanding psychiatric institution. Since 1948, Leon Lowenstein has been a director of Hillside to which he contributed funds to erect two buildings in honor of his mother and father.

Leon Lowenstein is also on the Board of St. Vincent's Hospital in New York City, and has contributed liberally to the hospital. In recognition of his untiring efforts, the hospital's clinic is now named "The Leon Lowenstein Clinic of St. Vincent's Hospital". An event which took place during the dedication of the Clinic illustrates Leon Lowenstein's impulsive nature and his deep personal involvement in the causes to which he gives money.

Cardinal Spellman of New York officiated at the dedication. In a day or so the cardinal was to leave on his well-known yearly Christmas trip to American soldiers in Korea. When the cardinal had finished his talk, full of praise and gratitude for Leon Lowenstein, Leon himself, seated on the platform as guest of honor, called the cardinal over. Leon reached under his seat and pulled out a huge parcel stoutly wrapped in paper. "Here are a few ten dollar bills", he told the surprised cardinal. "I want you to take them along with you to Korea and distribute them as you see fit."

Optical Bleaches Intensify Whiteness

Dyers and finishers of rayon, nylon, acetate, Acrilan and Orlon are making more and more use of optical bleaches to obtain greater appeal in their white goods. They have found that the brighter and clearer whiteness imparted by optical bleaches gives them a sales advantage in today's highly competitive market.

Optical bleaches replace blue waves that have been absorbed by the fabric. They do this by converting invisible ultraviolet rays into visible blue light. Housewives sometimes use bluing to try to achieve a similar effect. However, that method is not nearly as successful as the use of optical bleaches. The additional blue white light waves that are produced through the use of optical bleaches balance out the proper proportion of light waves that the eye must perceive in order to see a clear brilliant white.

The effect of optical bleaches such as American Cyanamid Co.'s Calcofluor White dyes on fabrics is impressive especially when they are viewed next to an ordinary bleached cloth. Because these dyes are fluorescent, they are most effective when the fabric is observed in daylight or other light, containing ultraviolet waves. Fluorescent white dyes are also very effective on pastel shades where brightness is most important. One of the dyer's biggest headaches is to get just the right tone in his light colors, and optical bleaches such as Calcofluor White will often help to add the necessary extra clarity. For this purpose, they can usually be applied either during the dyeing operation or in the final rinse after dyeing.

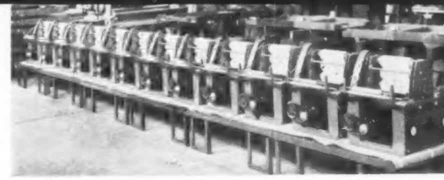
Fabrics that have been treated with Calcofluor White are stable to repeated washings even when soap or detergent is used that does not contain an optical bleach. The Dyes Department of Cyanamid's organic chemicals division has made extensive tests in this direction and found that a typical cotton fabric can be washed five times and more with an average loss in Calcofluor White of only between 10 and 20%.

One advantage of fluorescent white dyes is that they can be used in addition to chemical bleaches thus adding to the final whiteness achieved and at the same time they promote no chemical changes or degradation within the fiber. Calcofluor White dyes can be applied to the fabric or fiber in most cases without adding another step in the wet processing. They may be applied in the wet-out or scouring baths, along with the bleaching operation, during the finishing stage with starch, some types of softeners, or resins, or even in the rinse bath. American Cyanamid makes four Calcofluor Whites for application to cellulosic fibers, but its White ST is most widely used on yarns and piece goods.

There are three Calcofluor Whites used to whiten or brighten the chemical fibers such as Acrilan, Arnel, nylon, acetate, and Orlon 42 as well as wool and silk. They are Calcofluor White RW, White RW Single, and White RWS. These types may be applied either by exhaust or padding procedures, but some of the newer fibers require higher application temperatures than those normally used for wool, silk, acetate, and nylon. All types of dyeing equipment used in the wet processing of these fibers may be used in applying the Calcofluor White RW types. ■

New MACHINERY

New EQUIPMENT



Row of Laboratory Padders

Anti-Static Roll Cover

Armstrong Cork Co., Lancaster, Pa., has announced development of a new anti-static roll cover that is reported to practically eliminate lapping caused by static and reduces waste. The cover, recently added to the Armstrong Accotex Line, is designed to meet the problems created by the growing use of synthetic yarns. Extensive field testing under actual production conditions for more than a year is said to have proven the covers, made in all standard sizes, as highly efficient.

Tying-in Machines

Improved Titan warp tying-in machines provide a unique, new method of tying cotton and spun rayon warps, according to Edda International Corp., New York City. This method consists of obtaining and end/and/end lease from the dropwires, with the Titan models, GK-6A and GK-6B, so designed that the machines will select the ends in sequence from this lease and tie them to the unleased ends (flat sheet) in the new beam. The models are said to be completely universal in that both can be changed to tie leased-to-flat, leased-to-leased or flat-to-flat warps, depending upon yarns and fibers to be tied.

Laboratory Pads

Continued interest of the textile industry in laboratory pads is reported by H. W. Butterworth & Sons Co. Butterworth has manufactured more than 500 of these units. Laboratory padders facilitate research into new textile processes without tying up production machinery, the company states. Since pressures are perfectly controlled, succeeding samples of matching colors and new formulas maintain exact matches of shade. Cloth is delivered from the padder with a minimum of moisture.

The Butterworth laboratory padder has a friction let-off at the entering side and slip belt winder at the delivery side. Other Butterworth laboratory machines include printers, agers, jigs, calenders, dryers, tenters, vat steamers and washers.

Tension Washer for Low Twist Yarns

Steel Heddle Manufacturing Co. has developed a tension washer for very fine low twist filament yarns, that is said to insure a completely uniform and perfectly flat surface. According to the company, variations in tension are materially reduced on each individual end as well as over the creel as a whole.

British Automatic Loom

Trumeter Co. is the sole agent in the United States for the new shuttle changing non-stop automatic loom, manufactured by Henry Livesey Ltd., Greenbank Iron Works, Blackburn, England, and W.E.M. Auto Looms Ltd., England. The loom is designed for rayon and synthetic fibers.

The shuttle changing arrangements have a battery of 12 shuttles fitted as a complete unit to the loom, which has been constructed to accommodate this battery. Operation of the shuttle change mechanism is effected from an electric distance feeler motion which does not require pirns with either a slot or a metal sleeve covering. An electric solenoid controlled by the feeler operates a small mechanical catch, which in turn presents a ball bearing roller to a cam surface.

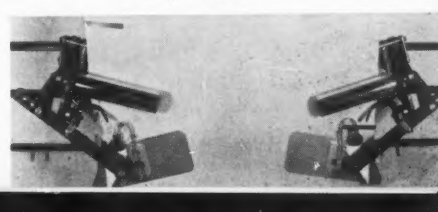
The loom is of the underpick type, and has been specially designed with a view to eliminating the possibility of starting places; eliminating the possibility of oil splashes and the creasing of cloths. Normal loom sizes can be manufactured between 36 and 80-inch reed space.

Clip Collector

Guider, Roll and Service Co., has developed a clip collector, said to be an entirely new device which is designed to remove selvedge clips before the cloth goes through finishing machines. The company suggests that the device be used before a peroxide steamer to prevent rust spots and rust holes; in front of dyeing machines to prevent undyed spots under clip.

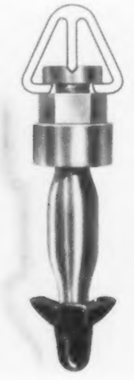
The clip collector itself is made up of a magnet which opens the clip, letting it drop into a box below. The device can be used on any type of guider.

New Clip Collector



Pneumafil Bobbin Holder

A new type bobbin holder, the "Tension-rite Bobbin Holder," is now being manufactured by Pneumafil Corp. The company reports that it is an entirely new kind of bobbin holder—one that maintains the desired constant tension, eliminates roving stretch and prevents roving slough-off without use of drag arms.

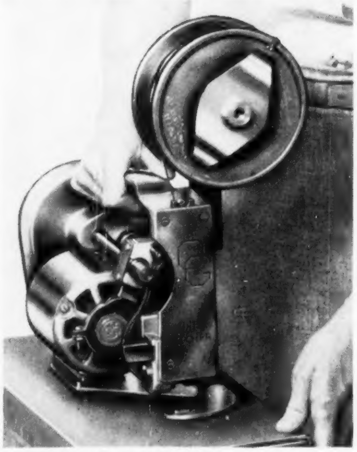


The holder is simple in construction and consists of only five parts. It is made of solid aluminum alloy with glasslike finish and features an exclusive bolite bearing which provides compensating tension.

Pneumafil states that demand for the bobbin holder is so great that sales will be limited only to the company's customers purchasing its lint free creel for at least the next six months. The new bobbin holder conforms to the lint free creel, following the airfoil principle which eliminates accumulation of lint.

Vacuum Cleaner for Textile Mills

American Balmes Corp. is offering a vacuum cleaner that is said to be designed specifically for textile mill use. The Vac-U-Max operates by use of compressed air, has no electrical connections, no motor, no bearing or movable parts, and consequently, is said to require little maintenance. One of its suggested uses is picking up lint and fly without hazarding the contamination of the sliver, yarn or material of one fiber with fibers of a different type.



Portable Wire Stitcher

Ordnance Gauge Co., Philadelphia, Pa., announces a lightweight "OG" portable wire stitcher. According to the company it weighs 15 pounds. Its use eliminates the need of lifting cartons to a stationary top sealer. The stitcher is said to perform on filled or partially filled cartons, making about 200 stitches per minute on either single or double fluted board, as well as on fiber, wood or leather.

New Wheelco Controllers

Wheelco Instruments Division of Barber-Colman Co. is now producing two new non-indicating controllers. The 150 series are potentiometer type units designed for those control applications encountered in batch process work.

The model 151 Amplitrol is a simple on-off controller for those applications where transfer lag and dead time can be reduced to a negligible value and the simplest of control forms made usable.

The model 152 is an anticipatory" time-proportioning controller which compensates for system inertia. Simple and effective voltage regulators, the division reports, eliminate the necessity of standardizing the potentiometer circuit.

For further information
write the editors

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in August, 1956. All prices are given as subject to change without notice.

RAYON FILAMENT YARN

American Bemberg

Current Prices

Effective February 15, 1956

Regular Production Reel Spun Yarn

Den/Fil	No Twist Skeins	Twisted* Skeins & Cones	8½ Turns	High Twist Skeins & Cones 12 Turns	or 15 Turns	18 Turns
40/30	$1.49	$1.95	....	....	....	$2.08
50/36	1.24	1.50	....	....	....	1.72
65/45	1.14	1.30	....	$1.53	....	1.58
75/60**	1.04	1.18	....	1.41	$1.41	1.49
100/74**	.95	1.08	....	1.33	1.33	1.44
125/60	.94	1.05	$1.09	....	....	....
150/120	.93	1.02	1.12	1.27	....	....
300/225	....	.95	....	....	1.08	....

* Twisted includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.

** Spun Dyed Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Twist Tubes	No Twist Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Skeins & Cones	15 Turn Skeins & Cones
40/30	$1.35	$1.35	....	....	....	....	....
50/36	1.00	1.00	....	....	....	....	....
65/45	1.05	....	....	....	....	$1.42	....
75/45**	.97	.97	$1.08	$1.08	$1.31	1.31	$1.39
75/54	.97	.97	1.08	1.08	....	....	....
100/60**	.89	.89	1.03	1.03	1.23	1.23	1.23
125/60	.84	.84	.99	.99	....	....	....
150/90***	.77	.77	.81	.81	....	1.15	1.15
150/120	.81	....	....	.93	....	....	....

** Bemberg Solution Dyed yarns are spun in 75/45 and 100/60 only. Black 15¢ per lb. extra; all other colors 35¢ per lb. extra.

*** Spun Dyed Black 15¢ per lb. extra.

Nub-Lite (Short Nubbi)

Code	Den/Fil	2½ Twist Cones	5 Twist Cones
1516	150/90	....	$1.35
1517*	150/90	....	1.35
2000	200/120	....	.96
2025**	200/120	....	.96
3000	300/180	$1.00	....
4000	400/224	1.00	....
6000	600/360	.98	....
8000	800/450	.98	....

* Code 1517 can be run in warp or filling.

** Code 2025-Softer than 2000.

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight allowed to Memphis, Tennessee. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold f.o.b. delivery point.

American Enka Corp.

Current Prices

Standard Quality Yarns

Standard Quality Rayon Yarns

A. Natural:

Den/Fil.	Luster	Turns	Weaving Cones	Beams	Skeins Long	Skeins Short	Cakes	3 Lb. Knotless Cakes	Knitting Cones
50/18	E	5 S							1.51
75/10	B	3 S&Z					1.03		
75/18	E	4 S							1.17
75/30	B	4 S&Z	1.12	1.12			1.03		1.12
75/30	B	8 S	1.17			1.32			1.17
75/45	P,E	2.5, 4, 5S&Z	1.12	1.12	1.18		1.03		1.12
75/60	P	3 Z	1.17						
100/14	B	3 S&Z					.91		
100/40	B,E	12 S							1.22
100/40	B,P,E	4, 5 S&Z					.91		.99
100/40,60	B,P	2.5 S&Z	.99	.99	1.03	1.07	.91		.99
100/60	E	2.5 S	1.01	1.01			.93		
125/40	E	3 Z							.91
150/40	B,P,E	2.1,3S&Z	.86	.86	.89	.94	.81	.81	.85
150/40	B,E	5 S	.86		.89	.94			
150/40	B,E	8 S&Z	.92		.95	1.00			
150/90	B,E	2.1 S&Z	.87	.87			.82		
200/40	P	3 Z							.79
250/60	P,E	2.4 Z							.72
300/50	B,E	3 S	.70	.70					
300/60	B,P,E	2.1 S&Z	.70	.70		.73	.68	.68	.70
300/60	B	3.5 S	.70	.70			.68		
300/60	B	4.3 S	.73	.73			.71		
300/60	B	7 S	.80						
300/40, 120 H.T.	B	2.5, 3. 4S	.72	.72					
450/80	B	3 S	.67	.67			.65	.65	
600/80,120	B,E	3 S	.66	.66			.64	.64	
900/120	B	3.4 S	.65				.63	.63	
900/120 H.T.	B	3.6 S	.67				.65	.65	

B—Briglo, P—Perlglo (semi-dull), E—Englo (dull), H.T.—High Tenacity.

B. Tinted Yarns: 5¢ additional per lb.

"Jetspun" Colored Yarns

Den/Fil.	Tenacity	Turns	Weaving Cones	Beams	Cakes	Colors
100/40	Regular	2.5S	1.34	1.34		All
100/60	Regular	4 S&Z			1.26	All
150/40	Regular	2.1S	1.21	1.21		All
300/40	Regular	3.4S	1.05			All
450/80	Regular	3.0S	1.02			All
600/80	Regular	3.4S	1.01			All
900/120	Regular	3.4S	1.00			All
300/40	High	3.4S	1.07			All
600/80	High	3.4S	1.03			All
900/120	High	3.4S	1.02	1.02		All

Terms: Net 30 days F.O.B. Enka, North Carolina or Lowland, Tennessee. Minimum common carrier transportation charges prepaid to first destination on or east of the Mississippi River.

American Viscose Corp.

Effective January 23, 1956

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	All Cones Beams Tubes	Cakes
50	20	Bright & Dull	$	$1.54	$1.51	$1.40
60	10	Bright	....	....	1.36	1.25
75	10-30	Bright	1.19	1.15	1.12	1.03
75	30	Dull	....	....	1.12	1.03
100	14-40	Bright	1.07	1.02	.99	.91
100	60	Dull	....	....	1.01	.93
150	24-40-60	Bright & Semi-Dull	.94	.89	.86	.81
150	40	Dull	....	....	.86	.81
150	90	Dull	....	....	.87	.82
200	10-44	Bright	.87	.82	.79	.75
250	60	Semi-Dull & Dull	.79	.75	.72	.70
300	44	Bright & Dull	.76	.73	.70	.68
300	50	Bright	....	....	.70	.68
300	234	Dull	....	....	.72	.70
450	100	Bright	....	.69	.67	.65
600	100	Bright	....	.68	.66	.64
900	50-60-100-150	Bright	....	.67	.65	.63
1200	75	Bright	....	.64	.62	....
2700	150	Bright	....	.67	.65	....

Extra Turns Per Inch

75	30	Bright 6-Turns	$1.31	$1.27	$1.24	$ ....
100	40	Bright 6-Turns	1.19	1.14	1.11	1.03
150	40	Bright 6-Turns	1.04	.99	.96	.91
300	15	Bright 5-Turns	....	....	.75	....
300	44	Bright 6-Turns	....	.83	.80	.78
600	30	Bright 5 Turns	....	.73	.71	.69

Rayflex Yarns

150	60	Rayflex	$	$	$ .89	$ .84
300	120	Rayflex	....	....	.72	.70
450	120	Rayflex	....	....	.69	.67
600	234	Rayflex	....	....	.68	.66
900	350	Rayflex	....	.69	.67	.65

Thick and Thin Yarns

150	40	Bright & Dull	....	....	1.10	....
150	90	Bright & Dull	....	....	1.10	....
200	75	Bright & Dull	....	....	1.02	....
300	120	Bright & Dull	....	....	.92	....
450	100	Bright & Dull	....	....	.89	....
490	120	Bright & Dull	....	....	.92	....
900	350	Dull	....	....	.97	....
920	120	Bright & Dull	....	....	.97	....

Colorspun Yarns

Currently producing regular tenacity and high strength at premiums of $.35 per pound.

Textile News Briefs

Hubinger's 75th Birthday

The Hubinger Co., Keokuk, Iowa, this year celebrates its Diamond Jubilee. The oldest corn refining firm in the country, Hubinger during its 75 years of operation has made major contributions to the many industries it serves, including the textile industry. Roy L. Krueger is president of the company which today manufactures a diversified line of almost 125 products from corn

1957 Spring Colors

The Color Association of the United States has issued to its members the 1957 Spring and Summer color cards for man-made fibers and silk and for woolens and worsteds. Each card portrays 40 new colors, including leading basic tones and special collections of pastels and brilliant hues. Colors are different in each card, though closely coordinated for all fashion requirements.

Compactor for Knitwear

Tubular Textile Machinery Corp., Woodside, N. Y., has acquired the exclusive knitting industry rights to the compactor process, invented by Richard Walton, Boston, Mass., and designed to effect maximum shrinkage control on textile materials. Fabric Research Laboratories, Dedham, Mass., owns all rights to manufacture the compactor process machine except knit goods rights.

Tube-Tex engineers are working on a project to set up a pilot machine in their own plant at Woodside. Plans for marketing the process have been deferred pending completion of design work.

Chemical Firms to Merge

Merger plans for the West End Chemical Co. and Stauffer Chemical Co., New York City, have been approved by boards of both companies. The boards are expected to adopt shortly a formal agreement which will be submitted to stockholders of both companies for approval. West End produces borax, soda ash, salt cake and lime near Searles Lake, Calif. It will continue, under the merger, to operate as the West End Chemical Co. Division of Stauffer Chemical Co.

New Stanley Plant

The Stanley Works is constructing a new plant at New Britain, Conn., which is designed to double the firm's production of steel

(Continued on Page 77)

Viscose Filament Yarns

The following deposit charges are made on invoices:

Metal Section Beams	$170.00 each
Wooden Section Beams	55.00 each
Wooden Section Beam Crates	30.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
32" flange	150.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
32" flange	75.00 each
Wooden Tricot Spool Crates	20.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices
Effective January 24, 1956

Den. Fil. Twist		Beams	Cones	Cakes	Non Shrunk Tubes
#49 and #14 Production					
75/30/3	Bright	....	$1.06	$.98	....
100/40/3	Bright	$.93	.91	.86	....
100/40/5	Bright	....	.97	.92	....
100/60/3	Bright	....	.92	.87	....
125/40/2Z	Bright	.89	.87	....	....
150/40/3	Bright	.84	.80	.75	....
150/40/2Z	Bright	.82	....	....	....
150/40/5	Bright	....	.86	.81	....
150/40/8	Bright	....	.92	.87	....
150/40/0	Bright (Non Shrunk)	....	.66	....	....
300/50/3	Bright	.69	.68	.66	....
300/50/0	Bright (Non Shrunk)	....	.60	....	....
#20 Production					
150/40/3	Bright	.82	.78	.73	$.72
150/40/0	Bright (Non Shrunk)	....	.66	....	....
150/40/2Z	Bright	.82	....	....	....
300/50/3	Bright	.69	.68	.66	....
300/50/0	Bright (Non Shrunk)	....	.60	....	....
#20 Production					
100/40/3	Dull		.91	.86	....
100/60/2Z	Dull	.95	....	....	....
100/60/0	Dull	....	.88	....	....
100/60/5	Dull	.99	.97	.92	....
150/40/3	Dull	.82	.78	.73	.72
150/40/0	Dull (Non Shrunk)	....	.66	....	....
150/90/3	Dull	....	.85	.80	....
250/60/0	Dull (Non Shrunk)	....	.64	....	....
250/60/3	Dull	....	.72	....	.67
#52 Thick & Thin Rayon					
150/60/3	Bright	....	1.10	....	....
450/120/3	Bright	....	.89	....	....

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with orders issued April 16, 1956

Bright and Dull

Den.	Fil.	Turns/ Inch Up to		(A) Cones, Beams, Tubes	Skeins	Cakes
40	20	3	Textile "Cordura"	$1.90	1.90	$1.85
50	20	3		1.58	1.58	
50	20	3	Textile "Cordura"	1.60	1.60	1.55
50	35	3	Textile "Cordura"	1.65	1.65	1.60
75	10	3		1.12	1.15	1.03
75	15	3		1.12	1.15	1.03
75	30	3		1.12	1.15	1.03
100	15	3		.99	1.02	.91
100	40	3		.99	1.02	.91
100	60	3	Bright	.99	1.02	.91
100	60	3	Dull	1.01	1.04	.93
125	50	3		.91	.93	.85
150	40	3		.86	.87	.81
150	60	3		.86		
150	60	3	Textile "Cordura"	.87	.88	.82
150	90	3	Dull	.87	.88	.82
150	100	3	Dull	.87	.88	.82
200	35	3		.79	.81	.75
300	20	3		.70	.73	.68
300	50	3.5		.70	.73	.68
300	120	3	Textile "Cordura"	.71	.74	.69
450	72	3		.67	.69	.65
600	96	3		.66	.68	.64
600	240	3	Textile "Cordura"	.67	.69	.65
900	50	3		.65	.67	.63
900	144	3		.65	.67	.63
1165	480	3	Textile "Cordura"	.65	.65	.62
1800	100	3		.65		
2700	150	3		.65	.67	
5400	300	3		.72		

Thick and Thin

100	40	3	#7	1.38	...	1.38
150	90	3	#7	1.10	1.11	1.10
150	90	3	#19	1.10	1.11	1.10
200	80	3	#7	1.02	1.03	1.02
200	90	3	#19	1.02	1.03	1.02
450	100	3	#7	.89	.90	.89
1100	240	3	#50	1.32		1.32
2200	480	3	#50	1.14		1.14

Fiber E

300	50	2½	.88
900	50	2½	.83
900	90	2½	.83
2700	150	2½	.88
2700	270	2½	.88
5400	540	2½	.88

(A) 2¢/lb. additional for cones less than 3# and tubes less than 2#.
Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Industrial Rayon Corp.

Effective January 27, 1956

Denier	Filament	Turns per In.	Type	2.8 Lb Cones	4.4 Lb Cones	Beams	2.2 Lb Tubes	4.4 Lb Tubes
100	40	2.5 "S"	Bright	.99		.99		
150	40	2.5 "S"	Bright	.86		.86		
150	40	2.5 "S"	Luster #4	.86		.86		
150	40	2.5 "S"	Bright intermediate strength	.87				
200	20	2.5 "S"	Bright	.79				
200	40	2.5 "S"	Bright	.79				
300	44	2.5 "S"	Bright	.70		.70		
300	80	2.5 "S"	Bright	.70		.70		
300	80	2.5 "S"	Luster #4	.70		.70		
300	80	2.5 "S"	Bright extra strong	.72		.72		
450	60	2.0 "S"	Bright		.67	.67		
600	90	1.5 "S"	Bright		.66	.66	.66	.66
900	50	2.0 "S"	Bright		.65	.65	.65	.65
900	150	1.5 "S"	Bright		.65	.65	.65	.65

Luster #4 is semi-dull.

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corp.

Current Prices

First Quality Yarns	Den/Fil	Twist	Cones: Knitting*, Jacquard and Velvet Cones	Cones: No Twist Knitting Cones	Cones: Beams, Tubes** and Weaving Cones	Untreated Cakes
	75/30	3.5			$1.12	$1.03
	75/30	7			1.25	
	75/30	15			1.32	
Normal	75/30	20			1.35	
Strength Yarns	100/40/60 Brt.	3.5			.99	.91
NARCO	100/40/60	12			1.17	
	125/52/60	3	$.91		.91	.85
	125/52/60	10			1.08	
	135/52	3			.90	
	150/42	3	.85		.86	.81
	150/42	0		$.66		
	150/60	3			.86	
	150/75	3			.86	
	300/75	3	.70		.70	
	300/75	0		.60		
	300/75	6			.80	
	600/98	3	.66		.66	
	900/46	2.5	.65		.65	
	1800/92	2.5	.65		.65	
Semi-High	300/75	3			.71	
Strength Yarns Hi-NARCO	300/75	6			.81	

* Oiled Cones .01 per pound extra for Graded Yarns only.
** 1 lb. tubes $.02 per pound extra for Graded Yarns only.

Terms: Net 30 days f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b. delivery point.

RAYON HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective April 2, 1956

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	$.62
1230/480	High	.62
1650/720	Low	.58
1820/720	High	.58
2200/960	High & Low	.58

Suprenka (Extra High Tenacity)

Denier	Elongation	Beams & Cones
1650/720	Low	.61
1900/720	High	.61
2200/960	Low	.60

* Beams Only.

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland Tennessee; minimum freight allowed to first destination east of the Mississippi River.

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strapping. John C. Cairns, president, presided at an informal ceremony marking beginning of construction.

Dacron Prices Increased

Du Pont's prices for its 1.5 and 1.25 denier Dacron polyester staple have been increased 5 and 10 cents a pound, respectively, effective August 28. New prices are $1.45 a pound for 1.5 denier and $1.50 for 1.25 denier.

Geigy Relocates

Geigy Chemical Corp., a subsidiary of the Swiss chemical firm, J. R. Geigy, S. A., has moved its headquarters from New York City to Saw Mill River Road, Ardsley, N. Y. W. F. Zipse is president of Geigy Chemical, and C. A. Suter is executive vice president.

Trade Group Changes Name

The corporate title of the National Council of Industrial Textiles, Inc., recently formed for the purpose of establishing a uniform identity and market place for the industrial textile industry, has been changed to Industrial Textiles Council, Inc. M. J. Lovell, director, reported plans for the industry-wide market week exhibit at the Trade Show Building in New York City the week of May 20, 1957, are progressing satisfactorily.

New Marshall & Williams Plant

Construction of Marshall & Williams Corp.'s new plant near Greenville, S. C., is well under way. The plant will house the firm's Southern Corporation and the Marshall & Williams Equipment Co., including sales and service headquarters, manufacturing facilities, and repair departments for all types of tenter frame equipment.

Personnel Notes

Philip B. Stull

Philip B. Stull has been elected director of American Enka Corp. He is vice president and director of Hercules Powder Co.

Joseph W. Conlon has been appointed manager of the Rensselaer, N. Y., plant, and **Dr. Chris C. Schulze** has been named manager of manufacturing of the Dyestuff and Chemical Division, General Aniline & Film Corp.

C. Perry Clanton, Jr., has been promoted to sales manager of textile products for Pneumafil Corp. **Edward J. Williams** has been named sales engineer for the South Carolina territory.

J. Garre Garretson, Jr., has been named manager of cutter fabric sales in the New England area for Dan River Mills, Inc.

Harvey P. Balsom has been appointed district sales manager for the textile machinery division of Warner & Swasey Co. for New England and adjoining areas in New York and Canada.

George P. Paine has been appointed executive secretary and assistant treasurer of the American Association of Textile Chemists and Colorists.

Ray E. Smith has been appointed technical representative of Mona Industries, Inc., Paterson, N. J. He formerly was associated with the Textile Research Division of American Viscose Corp.

James D. Cummings

James D. Cummings has been named a sales representative by North American Rayon Corp. In his new capacity he will also handle sales for American Bemberg and Skenandoa Rayon Corp.

Herman Behme has been appointed eastern manager of market development for Stauffer Chemical Co.

Donald K. Addie has been made production superintendent for Pittsburgh Plate Glass Co.'s Fiber Glass Division, Hicksville, L. I.

A. L. McArthur, III, has been made technical sales representative for Sun Chemical Corp.'s Warwick Chemical Co. division.

Theodore A. Day and **Henry P. Krogstad** have been named sales representatives for Stanley Steel Strapping, division of The Stanley Works, New Britain, Conn.

Emery Industries, Inc., has assigned **Robert F. Connelly** as West Coast field salesman for the Organic Sales Department, and **Robert H. Dhonau** and **Arthur R. McDermott** have been added to the staff of the Development and Service Department.

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American Viscose Corp.

Effective April 2, 1956 (Revised as of May 31, 1956)

Super Rayflex

Denier	Filament	Twist	Beams	Cones
1650	980	0	$.61	$.61
1650	980	4.1Z	.61	....

Tire Yarn

Denier	Filament	Twist	Beams	Cones
1100	490	2.5Z	.62	....
1650	980	0	.58	.58
1650	980	3.2Z	.58	....
2200	980	0	.58	.58

High Strength

Denier	Filament	Twist	Beams	Cones
1150	490	2.5Z	.62	.62
1230	490	3.6Z	.62	.62
1650	980	3.5Z	.58	.58
1875	980	3.6Z	.58	.58

Super Rayflex, Tire Yarn and High Strength yarns are sold "Not Guaranteed for Dyeing."

Tire Fabric

1100/490/2	.72
2200/980/2	.665

Above prices based on 80% minimum Carcass, 15% maximum Top Ply, 5% maximum Breaker.

1650/980/2

* Production Factor			
525	Open	Carcass	.665
300	490	Top Ply	.675
115	275**	Breaker	.70

* Determine by dividing total ends by picks.

** Orders limited to 5% total 1650 fabric booked for any given period.

SUPER RAYFLEX FABRIC — Add .03 to above tire fabric prices.

The following deposit charges are made on invoices:

Beams	$55.00 each
Crates (Metal)	75.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition—freight collect.

Terms: Net 30 days.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Super Cordura"

(all packages)

1100	480	2	$.68
1250	480	2	.68
1650	720	2	.61
1900	720	2	.61
2200	960	2	.60
2450	960	2	.60

Beams containing ends of direct dyed yarn $3.30 per end extra.

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Industrial Rayon Corp.

Effective March 26, 1956

Unbleached Bright High Tenacity Yarns

SINGLE END BEAMS AND CONES:

Den.	Fil.	Turns Per In.	4.4 Lb. Cones	Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
1100	480	1.5 "Z"	.62	.62	.62	.62
1650	720	1.5 "Z"	.58		.58	.58
2200	1000	1.5 "Z"	.57	.57	.57	.57
3300	1440	1.5 "Z"	.58	.58	.58	.58
4400	2000	1.5 "Z"	.57	.57	.57	.57

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

North American Rayon Corp.

High-Strength Yarns—SUPER-NARCO

		Twist	Cones	Beams
1650	720	3Z		$.51
1850	720	3Z	$.565	
Super High Strength Yarns—				
1650	720	1.5Z	.535	.54

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b delivery point.

ACETATE FILAMENT YARN

American Viscose Corp.

Current Prices

Effective December 20, 1955

Bright and Dull

* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
55/14	$.99	$.97	$1.00	$.93	$.94
75/20	.95	.93	.96	.89	.90
100/28	.91	.89	.92	.85	.86
120/32	.82	.80	.83	.76	.77
150/41	.74	.73	.75	.69	.70
200/54	.70	.68	.71	.66	.67
300/80	.66	.64	.67	.62	.63

* Standard Twist 2¢ additional.

Terms: net 30 days.

Celanese Corp. of America

Current Prices

Effective December 19, 1955

Bright and Dull

	Intermediate Twist				Spinning Twist		
Denier and Filaments	4 & 6-Lb Cones	Beams	4 & 6-TM Tubes	4-Pound Cheeses	Cones	Beams	O Twist Tubes
45/13	$1.12	$1.13	$....	$....	$....	$1.07	$....
55/15	.99	1.00	....	....	.93	.94	.875
75/20	.95	.96	.93	....	.89	.90	.79
75/50	.97	.98	.95	....	....	....	.84
100/26-40	.91	.92	.89	....	.85	.86	.77
120/40	.82	.83	.81	....	.76	.77	....
150/40	.74	.75	.74	.74	.69	.70	.66
200/52	.70	.71	.70	....	.66	.67	....
300/80	66	.67	.66	....	.62	.63	.60
450/120	.64	.65	.64	....	.60	.61	....
600/160	.62	.63	.62	....	....	....	....
900/80-240	.60	.61	.60	....	....	....	.58

3 to 5 Turns on Cones or Beams	$.02 Additional
150 Denier 12 TM Tubes	.73
55/0/15Dull Tricot Beams	.935
2-Pound Cheeses	.01 Less Than 4-Pound Cheeses
2-BU and 4-BU Tubes	Same Price as 4 and 6-Lb. Cones

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Celaperm Filament Yarn Prices

	Intermediate Twist		Spinning Twist	
Denier and Filaments	4 & 6-Lb. Cones	Beams	Cones	Beams
55/15	$1.37	$1.38	$1.31	$1.32
75/20	1.34	1.35	1.28	1.29
100/26	1.28	1.29	1.22	1.23
120/40	1.19	1.20	1.13	1.14
150/40	1.11	1.12	1.06	1.07
200/52	1.05	1.06	1.01	1.02
300/80	1.01	1.02	.97	.98
450/120	.99	1.00	.95	.96
600/160	.97	.98	....	....
900/80	.94	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Effective March 11, 1955

Celaperm Black Yarn Prices

	Intermediate Twist		Spinning Twist	
Denier and Filaments	4 & 6-Lb. Cones	Beams	Cones	Beams
55/15	$1.17	$1.18	$1.11	$1.12
75/20	1.14	1.15	1.08	1.09
100/26	1.08	1.09	1.02	1.03
120/40	.99	1.00	.93	.94
150/40	.91	.92	.86	.87
200/52	.85	.86	.81	.82
300/80	.81	.82	.77	.78
450/120	.79	.80	.75	.76
600/160	.77	.78	....	....
900/80	.74	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Acetate

	Intermediate Twist				Low Twist		Zero Twist	
Denier & Filament	2 & 4 Lb. ⅝" Tubes	4-6 Lb. Twist Tubes	Cones	Beams	Cones	Beams	Tubes	Beams
45/13/24			1.12	1.13		1.07	1.05	
55/18/24			.99	1.00		.94	.875	.935
75/24		.93	.95	.96	.89	.90	.79	.89
75/50		.95	.97	.98			.84	
100/32		.89	.91	.92	.85	.86	.77	
100/66			.93	.94			.79	
120/40/50		.81	.82	.83	.76	.77	.73	
150/16			.78	.79			.69	
150/40		.74	.74	.75	.69	.70	.66	.69
200/60		.70	.70	.71	.66	.67	.65	
240/80			.68					
300/80	.66	.66	.66	.67	.62	.63	.60	.62
450/120	.64	.64	.64	.65	.60	.61		
600/80/160	.62	.62	.62	.63	.59	.60		
900/44/70/240	.60	.60	.60	.61	.59	.60	.58	
1800/88	.61	.61	.61	.62	.60	.61	.59	
2700/132/210	.61	.61	.61	.62	.60	.61		
3200/160/210	.61		.61	.62				

A. 1# ⅝" Tubes—add .02 to 2 & 4 lb. ⅝" Tubes Price.

B. Regular Twist (3 thru 5 t.p.i.)—add .02 to Intermediate Twist Price.

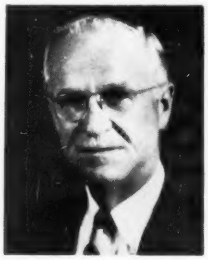
C. 2 lb. Twisted Tubes—.01 less than 4 & 6 lb. Twisted Tubes on 150-200-300 Denier Intermediate Twist.

(Continued from Page 77)

Ernest Schleusener has been elected vice president, treasurer and a director of Rodney Hunt Machine Co., Orange, Mass.

Harold A. Sweet, Jr., has been appointed director of the Industrial Division of Refined Products Corp.

V. J. Dionne has joined the merchandising division of Industrial Rayon Corp.



Jesse W. Stribling

Jesse W. Stribling has been named sales manager of Universal Winding Company's Domestic Textile Machinery Division.

H. H. Kieckhefer has been appointed sales manager of the Wheelco Instruments Division of Barber-Colman Co., Rockford, Ill.

Robert D. Blum, Jr., has joined the product development staff of the Textured Yarn Company.

S. H. Williams has been promoted to assistant general manager, Dyestuff and Chemical Division of General Aniline & Film Corp.

Bernard Seligman has been appointed a technical sales representative of Baker & Co., Inc., Newark, N. J.

William F. Gill

Crysler Co., a subsidiary of R. H. Hood, will represent the Benjamin Booth Co., Philadelphia, Pa., in New England. Booth has been a long-time supplier to textile mills, makes Strip-O-Matic and conventional card clothing, and Supr-O-Tape. Booth recently announced Supr-O-Band, a new banding for spindle drives. **William F. Gill** is head of Crysler's sales to textile mills.

Charles A. Shoecraft has been named merchandising manager for boys' wear for Du Pont's Textile Fibers Department.

American Viscose Corp. has named **Rene Bouvet** an assistant director of the Textile Research Department; **George G. Wells**, sales development representative, has been transferred to the department's Marcus Hook headquarters, and has been replaced at the Roanoke rayon plant by **George A. Glarner. J. Raymond Murphy, Jr.**, has been transferred to the Fiber Sales Department in New York.

Charles W. Carvin, Jr., has been appointed assistant nylon sales manager of The Chemstrand Corp. at New York City, and **R. Wayne Harrison** has been assigned to the firm's Southern district sales office in a sales capacity.

Death

Dr. Madison L. Marshall, 50, died August 7 following a heart attack. Dr. Marshall, a native of Dayton, Pa., was group leader of the applied physical chemistry group in the Research and Development Division of The Chemstrand Corp., Decatur, Ala.

Color-Sealed

Denier	Intermediate Twist: Twisted Tubes 2 Lb.	Intermediate Twist: Twisted Tubes 4 & 6 Lb.	Intermediate Twist: Cones	Intermediate Twist: Beams	Low Twist: Cones	Low Twist: Beams	Zero Twist: Tubes	Zero Twist: Beams
55/18			1.37	1.38		1.32	1.245	1.315
75/24			1.34	1.35	1.28	1.29	1.18	1.28
100/32	1.26	1.26	1.28	1.29	1.22	1.23	1.14	
150/40	1.10	1.11	1.11	1.12	1.06	1.07	1.03	1.06
200/60	1.04	1.05	1.05	1.06	1.01	1.02	1.00	
300/80	1.00	1.01	1.01	1.02	.97	.98	.95	.97

A. Regular Twist—add .02 to intermediate twist prices.

Black

Denier	Intermediate Twist: 2 & 4 Lb. ⅝" Tubes	Intermediate Twist: 4 & 6 Lb. Twisted Tubes	Intermediate Twist: Cones	Intermediate Twist: Beams	Low Twist: Cones	Low Twist: Beams	Zero Twist: Tubes	Zero Twist: Beams
55/18			1.17	1.18	1.11	1.12	1.045	1.115
75/24		1.12	1.14	1.15	1.08	1.09	.98	1.08
100/32		1.06	1.08	1.09	1.02	1.03	.94	
150/40		.91	.91	.92	.86	.87	.83	.86
200/60		.85	.85	.86	.81	.82	.80	
300/40-80	.81	.81	.81	.82	.77	.78	.75	.77
450/120	.79		.79	.80	.75	.76		
600/160	.77		.77		.73			
900/44-70-240								
1800/88	.74		.74		.73			
2700/132-210	.74		.74		.73			
3000/210								
3200/160	.74		.74					

A. Regular Twist (3 thru 5 t.p.i.)—add .02 in intermediate twist prices.

B. 2 lb. Twisted Tubes are the same as 4 & 6 lb. except on 150-200 and 300 denier intermediate twist where the price is .01 less.

C. 1 lb. ⅝" Tubes—add .02 to 2 and 4 lb. ⅝" Tubes.

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective December 19, 1955

Estron Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Tubes	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams	Zero Twist Tubes
55/13	$1.01	$0.99	$0.97	$1.00	$0.93	$0.94	$0.87½
75/19	.97	.95	.93	.96	.89	.90	.79
75/49	.99	.97	.95	.98	....	....	....
100/25	.93	.91	.89	.92	.85	.86	.77
120/30	.86	.84	.82	.85	.78	.79	....
150/38	.76	.74	....	.75	.69	.70	.66
200/50	.72	.70	....	.71	.66	.67	....
300/75	.68	.66	....	.67	.62	.63	.60
450/114	.66	.64	....	.65	.60	.61	....
600/156	.64	.62	....	.63	.59	.60	.60
900/230	.62	.60	....	.61	....	....	.58
900 & Heavier	....	....	....	....	....	....	.58

Current Prices

Chromspun—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Regular Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams
55/13	$1.39	$1.40	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.28	1.29	1.22	1.23
150/38			1.11	1.12	1.06	1.07
300/75			1.01	1.02	.97	.98
450/114			.99	1.00	.95	.96
900/230			.94	.95	....	....

Current Prices

Chromspun—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist & Spun Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900/230	.76	.74	.75	....

Prices are subject to change without notice.

Prices on special items quoted on request.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

RAYON STAPLE and TOW

American Viscose Corp.

Current Prices

Rayon Staple

	Bright and Dull
Regular	$ .32
Extra Strength	
1.0 Denier	.34
"Viscose 32A"	.36
"Avisco Crimped"	
1.25 Denier	.34
3.0 & 5.5 Deniers	.33
8.0 & 15.0 Deniers	.35
"Avisco Smooth"	
8.0, 15.0 & 22.0 Deniers	.37
Short Staple Blend	.34

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)	
1.5, 3.0 & 5.5 Denier Per Filament	.34
9.0 Denier Per Filament	.36
Grouped Continuous Filaments (4400/300 & 2000/1500)	.65

Prices of other descriptions on request.

Terms: Net 30 days.

Celanese Corp. of America

Current Prices

Rayon Tow

	Bright & Dull
1.5, 3, 5 D.P.F.	.34
8 D.P.F.	.36

Courtaulds (Alabama) Inc.

Effective April 23, 1956

Rayon Staple

	Bright	Dull
1½ and 3 denier	$.31	$.31

Available in 1⅛", 1-9/16" and 2".

"Coloray" Spun Dyed Rayon Staple

	1½ Den. 1-9/16"	3 Den. 2"	4½ Den. 6"	Price per Lb.
	(Code numbers for color and denier)			
Black	1404	1419	1425	37¢
Tan	8004	8019	8025	39¢
Medium Brown	8804	8819	8825	39¢
Silver Grey	1004	1019	1025	39¢
Terra Cotta	8204	8219	8225	39¢
Khaki	3004	3019	3025	40¢
Dark Brown	8604	8519	8525	40¢
Slate Grey	0804	0819	0825	43¢
Light Blue	4004	4019	4025	44¢
Sulphur	2004	2019	2025	44¢
Apple Green	5104	5119	5025	45¢
Peacock Blue	4604	4619	4625	46¢
Medium Blue	4204	4219	4225	48¢
Dark Blue	4404	4419	4425	49¢
Hunter Green	5404	5419	5425	49¢
Indian Yellow	2504	2519	2525	49¢
Pink	6004	6019	6025	50¢
Turquoise	4804	4819	4825	50¢
Malachite Green	5204	5219	5225	51¢
Red	7004	7019	7025	56¢

(In addition to the above, Black is also available in:
1½ den. 1⅛" (1401) 3 den. 1-9/16" (1416) 4½ den. 2"
3 den. 1⅛" (1413) 3 den. 2½" (1420) 4½ den. 4")

Terms: Net 30 days, f.o.b. LeMoyne, Alabama. Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Rayon Co.

Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective February 8, 1956

REGULAR	
1.5 denier Bright 1½" and 2"	32¢
VISCALON 66 (Crimped)	
8 denier 2" Bright	35¢
15 denier 3" Bright	35¢
15 denier 3" Dull	35¢

"KOLORBON"—Solution Dyed Rayon Staple

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	45¢	45¢	....
Sandalwood	45¢	45¢	....
Nutria	45¢	45¢	....
Sea Green	45¢	45¢	....
Mint Green	45¢	45¢	....
Champagne	45¢	45¢	....
Cafe Brown	....	....	55¢
Midnight Black			45¢
Gold	45¢	45¢	....
Turquoise	45¢	45¢	....

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

Dacron-Cotton Summer Suits

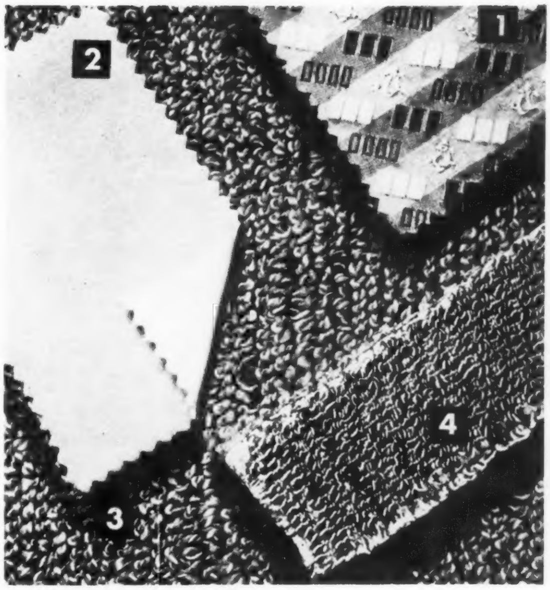
(Continued from Page 58)

The use of Dacron and cotton in lighter weight suits, according to Alexander, promises to be as important as blends of 50 to 60% Dacron with wool in tropical weights.

The 21 suit and sport coat manufacturers featuring the Dacron-cotton mixture probably account for an estimated 50% or more of the industry's total sales.

Interest in the Dacron-cotton mixture has been stimulated by trade and consumer knowledge of its success in men's furnishings, where the 65/35 blend is widely used in wash and wear shirts.

Clyde S. Rine, Jr., sales and merchandising vice president of Palm Beach Co. reported his firm had chosen 65/35 blend for its wash and wear suits and sportswear because of its lightness in weight and other desirable qualities.



Cross-Dyed Bemberg-Viscose

American Bemberg has announced development of cross-dyed Bemberg-Viscose fabrics. Interesting color effects have been obtained in rugs, laces, tie fabrics, plushes, velvets and suitings. These fabrics are said to be highly commercial, practical and marketable. The cross-dye effects are obtained by conventional dyeing procedure and entail no special processing or added cost. American Bemberg claims the development presents to fabric design versatility and fluidity helpful in today's competitive selling.

ACETATE STAPLE and TOW

Celanese Corp. of America

Current Prices

Staple

Celanese Acetate Staple	Bright & Dull
2, 3, 5.5 & 8 Individual Deniers	$.32
12 & 17 Individual Deniers	.33
35 & 50 Individual Deniers	.36
5/8" to 7/8" cut length (all deniers)—Premium	.03
Variable Acetate Fibers	.30
35 Individual Denier Flat Filament Acetate	.38

Tow

Celanese Celatow Acetate	Bright & Dull
2, 3, 5.5 & 8 Individual Deniers	$.34
12 & 17 Individual Deniers	.35
35 & 50 Individual Deniers	.37

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

NON CELLULOSIC YARN

ACRYLIC

NYLON

Allied Chemical and Dye Corporation

"Caprolan" Tensile Tough Nylon

Effective September 24, 1956

Heavy Yarns

Denier	Fila-ment	Turn/In.	Twist	Type**	Package	Price/Lb.
2100	408	0	0	HB	Paper Tube*	$1.27
2100	112	0	0	HB	Paper Tube	1.30
2500	408	0	0	HB	Paper Tube	1.27
2500	112	0	0	HB	Paper Tube	1.30
3360	544	0	0	HB	Paper Tube	1.26
3360	168	0	0	HB	Paper Tube	1.29
4200	680	0	0	HB	Paper Tube	1.26
4200	224	0	0	HB	Paper Tube	1.29
5000	816	0	0	HB	Paper Tube	1.25
5000	280	0	0	HB	Paper Tube	1.28
7500	1224	0	0	HB	Paper Tube	1.24
10,000	1632	0	0	HB	Paper Tube	1.24
15,000	2448	0	0	HB	Paper Tube	1.23

Terms—Net 30 days.

These prices are subject to change without notice. All prices are quoted F.O.B. shipping point.

Lowest freight cost prepaid or allowed east of Mississippi River.

* Paper Tubes non-returnable, no charge.

** Type is used to describe luster and tenacity.

Type HB: High Tenacity, Bright.

American Enka Corporation

Nylenka Filament Yarn Prices

Effective March 16, 1956

Denier & Filament	Twist	Luster	Type	Tenacity	Package	Yarn Weight per Package	Price per Pound, Std.	Price per Pound, Sub.
15/1	0.5Z	semi-dull	9402	Normal	Pirn	1 lb.	$5.00	$4.80
30/6	0.5Z	semi-dull	9414	Normal	Pirn	2 lb.	2.25	2.10
30/8	0.5Z	semi-dull	9424	Normal	Pirn	2 lb.	2.25	2.10
40/8	0.5Z	semi-dull	9426	Normal	Pirn	2 lb.	1.90	1.75
50/13	0.5Z	semi-dull	9442	Normal	Pirn	2 lb.	1.80	1.70
100/24	0.5Z	semi-dull	9628	Normal	Pirn	2 lb.	1.60	1.55
100/32	0.5Z	semi-dull	9652	Normal	Pirn	2 lb.	1.60	1.55
200/34	0.5Z	bright	9822	Normal	Pirn	2 lb.	1.45	1.40
200/34	0.5Z	bright	9222	Normal	Cone	4 lb.	1.45	1.40
210/34	0.5Z	bright	9204	High	Pirn	2 lb.	1.45	1.40
210/34	0.5Z	bright	9214	High	Cone	4 lb.	1.45	1.40
840/140	0.5Z	bright	9202	High	Pirn	2 lb.	1.30	1.20
840/140	0.5Z	bright	9208 9228	High	Cone	4 lb.	1.30	1.20
840/140	0.5Z	bright	9302	High	Beam	—	1.30	1.20

Pirns charged at $.25 each. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams and cradles are deposit carriers and remain property of American Enka Corporation.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

The Chemstrand Corp.

Current Prices

Denier	Fila-ment	Twist	Type*	Package	Standard Price/lb.	Second Price/lb.
10	1	O	SD	Bobbins	$8.00	$7.60
15	1	O	SD	Bobbins	5.00	4.80
15	1	O	D	Bobbins	5.05	4.80
30	10	Z	SD	Bobbins	2.25	2.10
40	7	Z	SD	Bobbins	2.00	1.75
40	13	Z	SD	Bobbins	1.90	1.75
40	13	Z	D	Bobbins	1.95	1.75
50	17	Z	SD	Bobbins	1.80	1.70
70	34	Z	SD	Bobbins	1.60	1.55
70	34	Z	B	Bobbins	1.60	1.55
70	34	Z	HB	Bobbins	1.65	1.55
100	34	Z	SD	Bobbins	1.60	1.55
100	34	Z	HB	Bobbins	1.65	1.55
140	68	Z	SD	Bobbins	1.55	1.50
200	34	Z	B	Bobbins	1.45	1.40
210	34	Z	HB	Bobbins	1.45	1.40
260	17	Z	HB	Bobbins	1.45	1.35
840	140	Z	HB	Beams	1.30	1.20
840	140	Z	HB	Tubes	1.30	1.20

Terms: Net 30 days.

Lowest transportation paid to destination east of Mississippi River.

Note: All Standard Quality Yarn—No break.

Bobbins, tubes, beams, and crates for beams become the property of the yarn purchaser. Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; and beams and crates for beams are invoiced at $220 and $25 respectively.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

Denier	Fila-Ment	Turn/In.	Twist	Type*	Package	1st Grade	2nd Grade
7	1	0	O	200	Bobbin	$9.00	$8.55
10	1	0	O	200	Bobbin	8.00	7.60
12	1	0	O	200	Bobbin	7.00	6.65
15	1	0	O	200	Bobbin	5.00	4.80
15	1	0	O	200	Tricot Beam	5.15	—
15	1	0	O	680	Bobbin	5.05	4.80
15	1	0	O	680	Tricot Beam	5.20	—
15	3	1/4	Z	200	Bobbin	5.00	4.80
20	1	0	O	200	Bobbin	4.00	3.80
20	7	1/2	Z	200	Bobbin	2.75	2.55
20	7	1/2	Z	680	Bobbin	2.80	2.55
20	20	3/4	Z	209	Bobbin	6.00	—
30	10	1/2	Z	100/200	Bobbin	2.25	2.10
30	10	1/2	Z	680	Bobbin	2.30	2.10
30	26	1/2	Z	200	Bobbin	2.35	2.15
40	7	1/2	Z	200	Bobbin	2.00	1.75
40	13	1/2	Z	100/200	Bobbin	1.90	1.75
40	13	1/2	Z	200	Tricot Beam	2.00	—
40	13	1/2	Z	400	Bobbin	2.00	1.85
40	13	1/2	Z	670/680	Bobbin	1.95	1.75
40	13	1/2	Z	670/680	Tricot Beam	2.05	—
40	34	1/2	Z	200	Bobbin	2.00	1.80
50	7	1/2	Z	200	Bobbin	1.90	1.70
50	17	1/2	Z	200	Bobbin	1.80	1.70
50	17	1/2	Z	670/680	Bobbin	1.85	1.70
60	20	1/2	Z	200	Bobbin	1.70	1.60
70	17	1/2	Z	100/200	Bobbin	1.60	1.55
70	34	1/2	Z	100/200	Bobbin	1.60	1.55
70	34	1/2	Z	300	Bobbin	1.65	1.55
70	34	1/2	Z	680	Bobbin	1.65	1.55
80	26	1/2	Z	200	Bobbin	1.60	1.55
80	68	1/2	Z	200	Bobbin	1.65	1.55
100	34	1/2	Z	100/200	Bobbin	1.60	1.55
100	34	1/2	Z	300	Bobbin	1.65	1.55
100	34	1/2	Z	680	Bobbin	1.65	1.55
100	50	1/2	Z	200	Bobbin	1.60	1.55
140	68	1/2	Z	100/200	Bobbin	1.55	1.50
140	68	1/2	Z	300	Bobbin	1.60	1.50
200	20	3/4	Z	100	Bobbin	1.45	1.40
200	34	3/4	Z	100/200	Bobbin	1.45	1.40
200	34	3/4	Z	680	Bobbin	1.50	1.40
200	68	3/4	Z	100/200	Bobbin	1.45	1.35
210	34	3/4	Z	300	Bobbin	1.45	1.40
210	34	3/4	Z	300	Beams	1.50	1.45
260	17	1	Z	100	Bobbin	1.45	1.35
260	17	1	Z	300	Bobbin	1.45	1.35
400	68	3/4	Z	100	Bobbin	1.35	1.25
420	68	3/4	Z	300	Bobbin	1.35	1.25
780	51	1/2	Z	300	Bobbin	1.35	1.25
800	140	1/2	Z	100	Bobbin	1.35	1.25
840	136	1	Z	300	Bobbin	1.30	1.20
840	140	1/2	Z	300/700	Alum. Tube/Beam	1.30	1.20
Color-Sealed Yarn							
200	34	3/4	Z	140	Bobbin	1.80	1.75
Industrial Yarn						Price/Lb.	
2520	420	0	O	300/700	Paper Tube	$1.27	
4200	700	0	O	300/700	Paper Tube	1.25	
5040	840	0	O	300/700	Paper Tube	1.25	
7560	1260	0	O	300/700	Paper Tube	1.24	
15120	2520	0	O	300/700	Paper Tube	1.23	

These prices are subject to change without notice.

Terms—Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Following are invoiced as a separate item:

Bobbins at 25 cents or 45 cents each depending on type.

Aluminum Tubes at 40 cents each.

Tire Cord Beams (Domestic Shipments) $220 each.

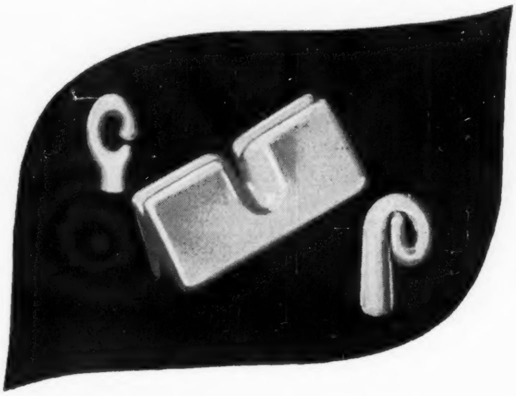
Cradles for Tire Cord Beams (Domestic Shipments) $115.00 each.

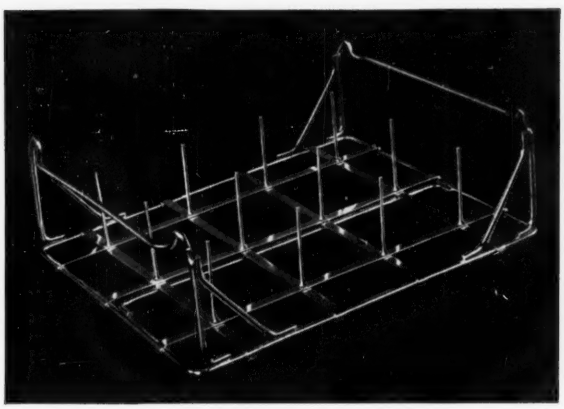
(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co.)

Types

* Type is used to describe luster, tenacity, and size or oil content.

Type 100 Bright, normal tenacity.
Type 200 Semidull, normal tenacity.
Type 209 Semidull, normal tenacity, #S-139 spin finish.
Type 300 Bright, high tenacity.
Type 400 Semidull, high tenacity.
Type 670 Dull, normal tenacity.
Type 680 Dull, normal tenacity.
Type 700, Bright, high tenacity.
Type 140, Color-sealed, Black, normal tenacity.






3851-A

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Dacron"

Den.	Fil.	Twist	Luster	Type	Tubes 1st Gr.
30	20	0	Dull	57	$2.75
40	27	0	Semi-Dull	56	2.30
40	27	0	Dull	57	2.35
70	14	0	Bright	55	1.90
70	34	0	Semi-Dull	56	1.90
70	34	0	Bright	55	1.90
70	34	0	Dull	57	1.95
100	34	0	Semi-Dull	56	1.85
140	28	0	Bright	55	1.80
150	68	0	Semi-Dull	56	1.80
220	50	0	Bright	51	1.75
250	50	0	Bright	55	1.75
1100	250	0	Semi-Dull	59	1.50
1100	250	0	Bright	51	1.50

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Yarn Types

51 Bright High Tenacity
56 Semi-Dull Normal Tenacity
57 Dull Normal Tenacity
55 Bright Normal Tenacity
59 Semi-Dull High Tenacity

Tubes are invoiced as a separate item at $.70 or $.80 each and are returnable for credit.

* Trademark for du Pont's polyester fiber.

NON CELLULOSIC STAPLE & TOW

ACRYLIC

The Chemstrand Corp.

Current Prices

"Acrilan"

2.0 denier Semi-dull staple and tow	$1.18
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.12
3.0 denier Bright & Semi-dull staple and tow	1.12
5.0 denier Bright & Semi-dull staple and tow	1.12
8.0 denier Bright and Semi-dull staple and tow	1.12
Hi-Bulk staple Semi-dull	1.12

Terms: Net 30 days. Freight prepaid to points east of the Mississippi River.

Carbide and Carbon Chemicals Co.

Div. Union Carbide and Carbon Corp.
Textile Fibers Dept.
Effective November 1, 1955

Dynel Staple

Natural Dynel
3, 6, 12, and 24 Denier, Staple and Tow — $1.05 per lb.
Whitened Dynel, and Dynel Spun with Light Colors: Blonde, or Gray
3 and 6 Denier, Staple and Tow — 1.20 per lb.
Dynel Spun with Dark Colors: Black, Charcoal, and Brown
3 and 6 Denier, Staple and Tow — 1.30 per lb.

Prices are quoted f.o.b. South Charleston, W. Va.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Orlon" Acrylic Staple & Tow

Denier	Price 1st Grade
2.0 Denier	$1.30
3.0 Denier	1.25
3.0 Denier Color-sealed Black—Staple only	1.60
4.5 Denier	1.20
6.0 Denier	1.20

Staple Lengths—1½", 2", 2⅝", 3", 4½".

High Shrinkage Staple same price as Regular Staple.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

NYLON

American Enka Corp.

Nylenka (Nylon Six Staple)

Denier	Luster	Length (Inches)	Price per pound
3	semi-dull	1⅛, 1½, 2, 2⅝, 3, 4½	$1.25
6	bright	3, 4½	1.25
8	bright	2⅝	1.20
10	bright	3	1.20
15	bright	3	1.20

Deniers and lengths of staple not listed above are available upon special request.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

Nylon Staple and Tow

Denier	Length	Type*	Price/Lb.
1.5	1⅛"—1½"—2"—2½"—4½"	100/200	$1.30
1.5	1⅛"—1½"—2"—2½"—4½"	101/201	1.32
3.0	1⅛"—1½"—2"—2½"—3"—4½"	100/200	1.25
3.0	1⅛"—1½"—2"—2½"—3"—4½"	101/201	1.27
6.0	1⅛"—1½"—2"—2½"—3"—4½"	100/200	1.25
6.0	1⅛"—1½"—2"—2½"—3"—4½"	101/201	1.27
15.0	1½"—3"—4½"—6½"	100	1.20
15.0	1½"—3"—4½"—6½"	101	1.22

Tow price same as Staple for:

1.5 denier type 200 in 330,000 total denier
1.5 denier type 201 in 350,000 total denier
3.0 denier type 100/200 in 430,000 total denier
3.0 denier type 101/201 in 455,000 total denier
6.0 denier type 100 in 330,000 total denier
6.0 denier type 101 in 345,000 total denier
15.0 denier type 100 in 330,000 total denier
15.0 denier type 101 in 350,000 total denier

These prices are subject to change without notice.

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Types

* Type is used to describe luster, tenacity, not crimpset, or crimpset.

Type 100 Bright, normal tenacity, not crimpset.
Type 101 Bright, normal tenacity, crimpset.
Type 200 Semi-dull, normal tenacity, not crimpset.
Type 201 Semi-dull, normal tenacity, crimpset.

Industrial Rayon Corp.

Effective April 9, 1956

Nylon Staple

1.5 denier	$1.30 per lb.
2, 3 and 6 denier	1.25 per lb.
8 and 15 denier	1.20 per lb.

Bright and semi-dull, required length.

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Dacron" Staple and Tow

Den.	Luster	Type	Staple Length	Tow Bundle	1st Gr
1.25	Semi-Dull	54	1¼"-3"	385M	$1.50
1.5	Semi-Dull	54	1¼"-4½"	385M	1.45
3.0	Semi-Dull	54	1¼"-4½"	385M	1.35
4.5	Semi-Dull	54	1¼"-4½"	385M	1.35
6.0	Semi-Dull	54	1¼"-4½"	385M	1.35

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

POLYVINYL ACETATE

American Viscose Corp.

Effective October 1, 1950

Vinyon Staple

3.0 denier ½" unopened	$.80 per lb.
3.0 denier 1¼", 2" opened	.90 per lb.
5.5 denier 1", 3½" opened	.90 per lb.

Terms: Net 30 days.

PROTEIN

Charlotte Fibre Co.

Exclusive Agents for Snia Viscosa Italy "Merinova"

Effective January 1, 1954

Merinova Staple

3 Denier 1-9/16", 2-½" and 3"	$.81
5 Denier 1-1/16", 1-9/16", 2-½", 4" and 6"	.81
9 Denier 4"	.81
18 Denier 6", 2-½"	.81
60 Denier 14"	.85

Other lengths or deniers can be produced as requested.
Solution-dyed Merinova staple fiber.

Light colors	.90 per lb.
Medium colors	.95 per lb.
Dark colors	1.00 per lb.

French Combed Tops ... 1.10

Terms: Net 30 days. All prices are duty paid, landed free, freight prepaid to rail point nearest destination.

Virginia-Carolina Chemical Corp.

Fiber Division

Effective January 15, 1951

"Vicara" Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.00 per lb.	$1.05 per lb.
5 Denier	1.00 per lb.	1.05 per lb.
7 Denier	1.00 per lb.	1.05 per lb.

Bleached "Vicara" Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.10 per lb.	$1.15 per lb.
5 Denier	1.10 per lb.	1.15 per lb.
7 Denier	1.10 per lb.	1.15 per lb.

Staple length ½ to 6 in.
Supplied in staple lengths or as continuous tow (270,000 filaments).
Terms: Net 30 days.
Prices f.o.b. Taftville, Conn. on 10% moisture regain basis.

Business Service Section

Exclusively for Business, Laboratory and Mill Services; Positions and Men Wanted; Business Opportunities; Mill Properties Wanted or For Sale; Reconditioned Machinery and Equipment, etc.

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2 Inches	15.00
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4 Inches	28.00
5 Inches	35.00
6 Inches	42.00
7 Inches	49.00
8 Inches	52.00

Calendar of Coming Events

Oct. 1-5—Southern Textile Exposition, Textile Hall, Greenville, S. C.
Oct. 3—AATT monthly meeting, Vanderbilt Hotel, New York, N. Y.
Oct. 3-4—National Cotton Council Chemical Finishing Conference, Hotel Statler, Washington, D. C.
Oct. 10-12—N. C. Textile Manufacturers Association annual meeting, Pinehurst, N. C.
Oct. 13—Textile Operating Executives of Georgia, Georgia Inst. of Technology, Atlanta, Ga.
Oct. 16-19—ASTM Fall meeting, Hotel Warwick, New York, N. Y.
Oct. 17-Nov. 4—Fashion-O-Rama, Coliseum, New York, N. Y.
Oct. 17-27—International Knitting Machinery Exhibition, Leicester, England.
Oct. 18-19—Southern Textile Methods & Standards Assoc., Clemson, S. C.
Oct. 21-24—Packaging and Materials Handling Exposition, St. Louis, Mo.
Oct. 22-26—44th National Safety Congress and Exposition, Conrad Hilton, Chicago, Ill.
Oct. 24-25—Carded Yarn Assoc. annual meeting, Charleston, S. C.
Oct. 27—Alabama Textile Operating Executives Fall meeting, Auburn, Ala.
Nov. 1-2—AIEE Fall Textile Conference, N. C. State College, Raleigh, N. C.
Nov. 1-2—S. C. Textile Manufacturers Assoc. Personnel Div., Myrtle Beach, S. C.
Nov. 7—AATT monthly meeting, Hotel Vanderbilt, New York, N. Y.
Nov. 26-30—22nd National Exposition Power & Mechanical Engineering, Coliseum, New York, N. Y.
Nov. 27-30—9th National Chemical Exposition, Public Auditorium, Cleveland, O.

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See our Booth—Spaces 453 & 454—Southern Textile Exposition, Greenville, South Carolina—October 1-5